157

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ACUTE APPENDICITIS: A SYMPOSIUM

ACUTE APPENDICITIS IN CHILDREN*

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Appendicitis as a general consideration deserves careful study not only because of its widespread distribution, but more particularly on account of the morbidity and mortality risks associated with it. Acute appendicitis in children is deserving of even more pains-taking study for not only is it the most common of all the abdominal diseases in children, but it is possessed of more far reaching devastating consequences. Its course is more rapid, its tendencies to perforation much greater, and its symptomatology as well as its physical signs, because of certain anatomical peculiarities, differ sufficiently from the adult cases often to make its accurate diagnosis apparently difficult. Yet, in children there is no other disorder or disease in which early and accurate diagnosis is so vitally essential to proper management and successful outcome of the case. Nor is there any other disorder in which errors of management at any stage, but more particularly in the early stage, are so apt to provoke serious and often fatal consequences.

Inasmuch as the most outstanding symptom of acute appendicitis is abdominal pain, a consideration of this disease must include all conditions met in children which are capable of producing and do produce acute abdominal pain. These conditions may be located within the abdomen or elsewhere in the organism. It is obvious, therefore, that appendicitis requires careful study of the case history, skillful physical examination and intelligent evaluation of the findings for a definite diagnosis. In arriving at the diagnosis the chief responsibility rests directly with the family physician and especially the pediatrician, for while surgeons feel competent to elicit and evaluate signs and symptoms in all surgical conditions in the adult, they prefer to rely upon the judgment of the pediatrician when it comes to children, and since the pediatrician generally sees the case before the surgeon is called in, it is but fair that he should accept and discharge this responsibility in such fashion as to leave no pitfalls for the surgeon.

In this presentation, which is a contribution to an educational campaign in an effort to promote longer life from the standpoint of reducing morbidity and mortality rates of appendicitis, all other conditions capable of provoking acute abdominal pain will be merely mentioned, with references indicated for the benefit of those who may wish to secure more detailed information of same. These are as follows:

Pneumonia [8, 13, 15]
Pleurisy [15]
Acute Throat Infections [5]
Tonsillitis [13]
Pharyngitis [5, 8]
Pericarditis [15]
Intussusception [15, 8]
Gastrointestinal Disorders [3]
Mesenteric Lymphadenopathy [5, 8, 13, 16, 17]
Tuberculous Peritonitis [16]

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Pneumococcal and Streptococcal Peritonitis [13, 15]
Meckel's Diverticulum [15]
Pyloric Stenosis [16]
Pyelocystitis [15]
Pyelitis [13, 8]
Henoch's Purpura [15, 8, 16]
Acetonemic Vomiting [15]
Measles [8, 16, 5]
Typhoid [15]
Renal Disease [9]
Gall Bladder Disease [9]

INCIDENCE

Mattestock (quoted in Pfaundler and Schlossmann)[9] in 1880, found 72 cases of acute appendicitis in children in a series which included 1030 adult cases. The number of admissions in the Zurich Children's Hospital from 1909 to 1918 was 334, while from 1919 to 1922, 1097 cases were operated. The ages represented by these cases are as follows:

Years of Age	Percentage
2	0.9
4	5.6
5	6.5
6	6.5
7	8.4
8	6.0
9	7.6
10	9.1
11	13.0
12	9.4
13	8.4
14	5.6
Over 14	9.1

In a series of 2295 cases reported by Maes[10] seen at the Louisiana State Charity Hospital 426 were in children under twelve years of age. Peterson[1] has called attention to the fact that appendicitis in early life is on the increase and Tasche[2] states that appendicitis in children occurs slightly more often in males than in females and though seldom seen under three years occurred with increasing frequency from this age to the seventh year. McLanahan[3] reported an age average of 3.2 years in a group of children in whom acute appendicitis had ended fatally, while Stone[4] reported a series of 258 cases of acute appendicitis in children proved by operation, found that the age distribution curve reached a peak at twelve years and remained high for two years following. He states that a study of this and similar series indicates that the incidence of acute appendicitis in children increases gradually from infancy to adult life, rather than presenting a sharp increase at any given age period. My impressions and experience appear to coincide with those of Stone, but it must be admitted that studies of disease from a statistical standpoint depend upon a variety of factors, hence the divergent conclusions appearing in the literature. The sex incidence indicates that males are more frequently involved than females. In Pattison's[18] series 59.7 per cent were males and 40.3 per cent females. The seasonal incidence shows an increase of cases during the months of June, July and August, while the race incidence shows that white children, though more often afflicted, do not have as high a death rate as negroes.

MORTALITY

McLanahan[3] in a study of 179 cases in children under thirteen years found a mortality of 3.91 per cent, the lowest for similar cases reported in the literature up to 1934. He also found that the children who died belonged to a group presenting spreading or generalized peritonitis, and significantly averaged only 3.2 years of age. Stone[4] divided 258 cases into three groups, namely:

Group 1. Acute appendicitis not ruptured;

Group 2. Acute appendicitis ruptured with localized peritonitis or definite abscess formation;

Group 3. Acute appendicitis with rupture and no localized peritonitis.

He compared these with a similar group of adult cases drawn from the same clinical source and found that while the mortality in Groups 1 and 2 were essentially the same in the two series (16 per cent), the mortality among the children of Group 3 was 34 per cent. In Kaiser's[7] series of 363 cases in children between 2 and 15 years of age the mortality was 0.75 per cent for acute uncomplicated cases; 6.5 per cent for cases of localized abscess, and 22.9 per cent for cases with diffuse peritonitis.

Maes[10] in his series, referred to above, found a mortality of 8.7 per cent.

Cross-sections of statistics on mortality of acute appendicitis show that the highest death rates are encountered during the third and fourth years and are met in cases in which peritonitis has developed. In a critical study by Pattison[18] of 38 patients six years of age and under, there were six deaths, or a death rate of 15.6 per cent, and he comments that "one of the obstacles encountered in these children is the apparent inability or difficulty in making early diagnosis". Nineteen cases or just one half, had had their symptoms 72 hours when admitted to the hospital; only 13 were uncomplicated, while 17 had abscess and eight a spreading peritonitis. Of the 38 cases only five gave a history of previous attacks.

From these figures it is apparent that acute appendicitis in children is a condition that must be considered not only frequent but on the increase and that its mortality can be definitely reduced almost to an inconsequent minimum by the mere establishment of early diagnosis and institution of proper management. This point is clearly emphasized by the statements of Hudson[11] who stated that in Massachusetts in a period from 1900 to 1930, 1795 children died of appendicitis, being distributed as follows: 25 cases in 1900, 107 in 1930, representing an increase of 428 per cent. During this same period the increase in the child population in this area was only 41 per cent.

CAUSE AND PATHOLOGICAL ANATOMY

No definite statement can be made as to the direct cause of appendicitis. Several factors have been proved in different instances as being apparently the causative agent. One outstanding factor is trauma resulting from lodgement within the appendix of small masses of fecal matter and intestinal parasites, especially pin worms. Within recent years investigators have directed attention to the rather striking coincidence that abdominal pains often are associated with diseases of the tonsils and throat. Brennemann[5] has shown by reference to other workers and his own observation that cases of acute appendicitis may occur in greatly increased numbers during epidemics of grippal infections and cited cases which leave little doubt that appendicitis may and does "occur as a complication of, or a sequel to an infection of the throat". Our own experience in the city of New Orleans during the epidemic just passed bears out these observations, since an outstanding factor of this epidemic has been the more or less marked regularity with which children have been attacked simultaneously with abdominal and throat distress.

PATHOLOGIC ANATOMY

Studies of this phase of appendicitis in children shed emphatic light upon the reasons for the sharp differences that exist in the clinical course, symptomatology, and diagnostic phases in the young. In children the appendix is situated higher than McBurney's point; and though no definite rules apply as to its actual position it may be found downward into the pelvis, directly on the cecum in the right iliac fossa, or it may point upwards as high as the liver. Truly it has been said that the location of the appendix in children may be anywhere between the lower border of the liver and the pelvis. Feer[6] states: "In the newborn the appendix lies at the lower end of the cecum and later approaches more and more to the inner side, that is, near the insertion of the ileum. It is freely movable, and generally hangs inward and downward and often the free extremity hangs in the pelvis". He further states "The appendix is relatively longer and wider in infancy than in later life and shows a funnel-shaped canal into the cecum." As regards the lymphatic follicles the same author states, "The lymphatic follicles of the mucous membrane are sparse in the infant but become more abundant in later life. Normally, membranes and bands may be present about the appendix which are difficult to differentiate from pathologic changes." According to Aschoff[12] the pathological process develops as follows: "The primary affection is an epithelial defect in the folds of the mucous membrance, usually in the distal portion. A small leukocytic infiltration is formed which may lead to a local ulceration. This shows a tendency to advance towards the serosa on which a fibrinous deposit is formed. If the process advances, necrosis of the whole wall may develop and frequently leads to perforation. According to the virulence of the infec-

tion, a peritonitis develops at the site of the inflamed or gangrenous appendix, which may remain circumscribed, or, in cases of gangrenous or perforative appendictis spreads over the peritoneum." It is well known that an outstanding characteristic of all tissues in young children is the tendency to respond very quickly to injuries of all types. This is particularly true of mucous membrances and lymphoid tissue and since the tissues of the appendix are of the same nature as the tissues of the tonsils, that is lymphoid, it should not be difficult to understand why pathology develops in the appendix more frequently than at any other site within the child's abdomen. These same factors, too, indicate the necessity of early accurate diagnosis so as to permit adequate intervention before destruction of tissue and perforation occurs.

SYMPTOMS AND THEIR SIGNIFICANCE

Although there is no essential difference in the symptomatology of a clear cut case of acute appendicitis in children, from the adult it must be recognized that a large proportion of cases do not present the typical classical symptom-complex which is so unmistakable. Often in children the clinical picture is far from clear, and it is in these cases especially that much harm often results from injudicious use of purgatives, enemas, and administration of food. While all symptoms may or may not be severe and alarming at the outset, their subsequent behavior depends entirely upon the extent, severity and progress of the pathology, and must be evaluated as representing two types of cases, namely, mild and severe.

In mild cases the onset usually arises during health without premonitory signs, or may follow closely a dietary indiscretion, perhaps incident to a holiday. Occasionally there is a history of previous mild abdominal pain that was regarded lightly by the parent and passed off without serious consequences. The bowel action at first may be diarrheal but within twelve to twenty-four hours becomes constipated. The temperature in these mild cases may not be elevated at all, or only slightly; this is a very important point to remember whenever one deals with abdominal pain, since it must be recognized that mild appendicitis may be present without a temperature rise. The pulse is almost always accelerated in chidren.

In these mild cases the child does not appear distressed, vomiting is generally absent and abdominal pain, if elicited, is found diffused over the entire abdomen or at some point far removed from the right iliac area. In older children the site of the pain is often pointed out by the patient, and in the vast majority of cases it is located away from the appendix region, being almost anywhere over the abdomen, but more frequently about the umbilicus, at the left hypochondrium or at the left iliac area. The only positive finding on examination is a slight, but definite spasticity evidenced by resistance to the palpating hand over the right rectus muscle. This is present even in cases in which the pain is referred to some point of the abdomen other than the appendix area.

In this type of case rest and starvation usually leads to complete disappearance of all symptoms in one to three days. However, it is in mild cases that the greatest danger lies, as the parent is apt to undertake its treatment without calling her physician and convert the case into a serious or even a fatal one by the injudicious use of purgation, enemas, and feeding.

In severe cases, where the pathology has involved the entire appendix wall, the clinical picture is quite different and approaches the classic. The facial expression is anxious and pale; the child is visibly restless and sleep is disturbed; vomiting and abdominal pain are pronounced, even without actual peritonitis having yet occurred, and the abdomen may be slightly distended. The temperature rises sharply with a range between 102° and 103° F. and the pulse rate rises to between 110 and 150 according to the age and physical development of the child.

Physical examination on the first day yields definite tenderness on pressure which may be diffuse and not accentuated over the appendix region as in the adult; but in children proper palpation invariably elicits a typical spasticity or resistance of the entire right rectus muscle which even in the presence of general rigidity may be clearly appreciated as being increased over the opposite rectus. Another physical finding that is of extreme value in the diagnosis of acute appendicitis in children is "cutaneous

hyperesthesia;" which can be easily elicited by careful pinching of the skin, with the fingers. Within forty-eight to seventy-two hours a distinct mass formation may be made out on gentle palpation over the right iliac region. Abdominal distention may be present even in the absence of actual peritonitis though this finding should always be considered as indicating a spread of the pathology to the peritoneal cavity.

In evaluating the relative significance of the symptoms it may be stated that pain in the abdomen of any child should always be considered as indicating the existence of appendicitis until satisfactory examination proves otherwise, for it is a fact that this symptom is present in every case. In very young children who cannot express themselves pain is indicated only by restlessness, a sobbing cry and the peculiar expression known as the "facies of pain." Even in older children one will miss many cases if he insists on finding pain localized in the right lower abdominal area before making the diagnosis of appendicitis, for in the vast majority of cases it is at almost any other part of the abdomen but there. It is more frequently complained of and pointed out with the finger or hand by the patient at the left hypogastrium, at the umbilicus, or at the left lower quadrant.

Tenderness and "cutaneous hyperesthesia" are extremely important and reliable, since they invariably become localized over the appendix region within twenty-four to forty-eight hours. One must always bear in mind that what may be the most important item in properly palpating a child's abdomen is to avoid fright. Approach should be gentle and reassuring, and the examining hand must be warm. Extreme gentleness in the actual palpation must be practised, otherwise contractions resulting from the resistance offered by the patient will make the examiner's effort worthless. It is important to palpate the appendix region, where we are most vitally interested, last of all, that is, after every other region of the abdomen has been palpated. In almost every case where localization of the pain has been established it can be best brought out by gentle slow pressure followed by a sudden quick removal of the palpating hand. This quick removal of pressure causes a distinct pain and is referred to as "relaxation pain;" it is felt by the patient at the appendiceal area even if the procedure has been practised at any other point of the abdomen, and when present, it is pathognomonic, and second in reliability to the "muscle guard" or rigidity of the right rectus already referred to. Generally, it may be safely assumed that abdominal pain without tenderness, right rectus rigidity (however slight) or "relaxation pain", is not due to appendicitis. On the other hand, one must be extremely certain of these negative findings before deciding against a diagnosis of appendicitis. A most important point in evaluating the significance of pain is the fact that spontaneous disappearance of pain is not an indication that the diagnosis is not appendicitis, or that it might represent improvement in the presence of appendicitis. Sudden disappearance of pain in appendicitis is a very serious, if not alarming sign of danger, since it generally means the occurrence of rupture.

In dealing with children suffering from abdominal pain it must be remembered that most children will answer affirmatively when asked if the pain is at a certain point. It is better practise to ask no questions, but depend entirely on the local muscle reaction and facial expression as one proceeds with palpation, since these are always entirely reliable, provided the child has been neither frightened nor shocked by the application of a cold hand or the sudden rough manipulation of the abdominal wall.

DIAGNOSIS

The actual diagnosis is generally not difficult if the above points are borne in mind by the examiner. It is necessary, of course, to differentiate all conditions which are capable of producing abdominal pain and which have been already referred to.

It may be safely stated that even differential blood counts and the evaluating of total leukocytic counts are not as reliable for the purpose of differentiation as is strict observance and establishment of the following:

1. The presence of definite abdominal pain.
2. Vomiting.
3. Tenderness.

4. Right rectus digidity or "muscle guard."
5. "Relaxation pain."
6. The child's facial expression and posture.

It would be entirely superfluous in a discussion of this type to devote any time to the subject of treatment, for it must be accepted by everyone that once the diagnosis of acute appendicitis is established there is but one treatment, namely operative intervention.

However, especially in a discussion of this type there is much to be said, and much profit to be derived from free and extended discussion of the attitude and procedures to be adopted in order that the mortality rate of acute appendicitis in children, which is at present higher than that for adults, may be brought down to where it should be. It is no exaggeration to state with Barrington-Ward[13] that "the mortality of appendicitis in children should be nil. If every case was diagnosed and submitted to operation within twenty-four hours of the beginning of the attack no case should be lost except as the result of anesthetic tragedy, or the more rare surgical accidents that may follow any operation." The figures referred to above, representing the studies of Maes et al,[10] which are based on the incidence and mortality of acute appendicitis in children in our community, indicate that many opportunities have been missed, and lives of children sacrificed at the hands of appendicitis. It is not enough for physicians to exercise care and diligence in the examination of children to whom they are actually summoned. No physician fully discharges his responsibility to his clientele unless besides actually treating diseases when they occur, he also undertakes the task of educating that portion of the public that forms his clientele to the outstanding dangers of diseases. Since appendicitis among children is one of the most devastating of all diseases, and since mortality increases with errors of management in the early stage of the disease, every physician should consider it not only a personal obligation but a civic duty to teach certain outstanding facts in connection with appendicitis. These are:

1. That every abdominal pain should be considered as being due to appendicitis until it is proved otherwise by diligent examination.

2. That in the presence of abdominal pain the administration of purgatives is extremely dangerous and may be death producing.

3. Enemas should be avoided for the same reason as purgatives, and food should be withheld entirely until the physician has been called and a diagnosis established.

If these facts are impressed upon the public at large and observed as they should be by all physicians, there is no question that the mortality of acute appendicitis in children will be reduced to the point of disappearing as stated by Barrington-Ward.[13]

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MEDICAL ASPECTS OF APPENDICITIS

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Appendicitis is rightly classed as one of the surgical diseases and there is no rational treatment except prompt removal of the affected structure, yet it is the family physician or the

internist who first sees the patient in the great majority of cases. No fact in the realm of practice is better established than the value of an early operation in this condition. This is generally accepted by surgeons and acted upon if they have an opportunity, but the main weight of responsibility rests with the regular medical attendant of the family. It is he who must ever be on the *qui vive* to make an early diagnosis and act with promptness and decision. This sounds easy and often is so, comparatively, but some cases present problems from more than one standpoint.

The first of these is establishing at least a tentative diagnosis. Osler once remarked that it is seldom not knowing, but rather not looking, that gets us into trouble. A carefully taken history and a thorough physical examination will usually disclose enough evidence to insure the safety of all concerned, no matter how early the patient is seen. The most common error is that of regarding the case as one of acute indigestion. We must particularly discount the statements of acute dietary indiscretion. In fact most persons are guilty of such every day. We must remember too that the discomfort of acute appendicitis is usually referred to the upper abdomen for the first few hours. The family will often insist that the fever is not high enough for appendicitis. You know, of course, that the tendency of appendicitis is to comparatively low temperature. It is well here to emphasize the necessity of leaving the thermometer under the patient's tongue for a sufficient length of time to determine the small fraction of a degree that is sometimes present. A safe rule is five minutes, the physician watching during that time to see that the lips of the patient are kept closed. Of considerable imporance is a slight increase in pulse rate. I remember that the late Dr. Kohlmann laid more emphasis on this than on any other finding. Nausea may be denied by the patient, may be absent, or may be very slight. The fact that it has subsided cannot be taken as significant. Tenderness in the right lower quadrant may also be denied or absent or very slight. Rigidity may be so slight as to leave a doubt in the mind of the examiner. There are few of us who cannot remember cases where the dread of surgery has caused patients to deny the pain entirely. We must remember that any or all of the findings may be atypical. In fact, the first effort is often not to make a positive diagnosis as much as to enable us to classify the case as one requiring the benefit of intensive attention and thorough study. This particularly applies to the withholding of foods, analgesic drugs and especially purgatives.

The second problem is that of securing the cooperation of the patient and his family in a more thorough investigation. This naturally includes hospitalization and the use of laboratory facilities. I have often remarked that the practice of medicine is part science, part art, and part salesmanship, and one of the most difficult feats that I have accomplished has been selling a family on removing the patient to an institution on a bare suspicion of appendicitis. They are sure that it is only indigestion. He has had numerous attacks just like this before. His brother Tom and Uncle Bill are quite subject to them. A man working in the office with him was sick just like this last week, took a dose of castor oil and was at work the next day. Moreover they feel that hospitalization means operation and they dread the danger of surgical procedure. Still further they hesitate at the expense involved. Only a small percentage of the families in New Orleans or in any other community are prepared for the expense of a major operation. They are panic-stricken at the thought of the disorganization of business affairs, household duties or school work. The firmness, kindness, diplomacy and salesmanship of the attendant are frequently taxed to the limit. I have often resorted to the following illustration: "Mrs. Blank, if there was a rattlesnake in your backyard, you would not let your children play out there barefooted. If there was one chance in ten of a rattlesnake being there or even one in a hundred you would take every precaution. If there was one chance in a thousand I would not go out there without hip boots and probably would not go with them. There is one chance in three of this patient's having appendicitis. If he hasn't he may come home tomorrow; if he has, immediate attention may mean saving his life. We should surely give him the benefit

of every possible chance that is at our disposal." It is here that definite statistics, such as those which have been supplied by the chairman of this program, are of unlimited value. There is nothing so convincing to the average person as the definite statement of such facts.

When the patient has reached the hospital and the surgeon has been called and the case has been thoroughly studied, there still is often an element of doubt remaining. Here again it is advisable to give those concerned the facts in the case and do it in such a way that, if a normal appendix be found on operating, it will not be necessary to dig up an alibi.

Allow me to state that the services of the internist are of more value than merely assisting in the establishment of the diagnosis. His statement as to the condition of the heart and lungs are often of importance, and where there is any doubt as to the general well-being of the patient, his continued observations may be a determining factor in the favorable progress of the patient to a normal state of well-being.

APPENDICITIS AS A COMMUNITY HEALTH PROBLEM

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Some important considerations of the problem of appendicitis in any community are the general mortality rates from the disease, and its rate of occurrence and fatality rates in different periods of life.

A considerable amount of publicity has been directed toward the high rates of mortality from appendicitis in the population as a whole. Certain cities have been pointed out as having excessively high rates, but a comparison of mortality rates of one city with another is not a fair comparison in most instances. Hospital facilities vary in extent in different cities which affect the number of non-resident deaths occurring in any particular community.

When we calculate the rates of mortality from appendicitis per 100,000 population for the individual states we can arrive at a much more accurate picture of the differences in various parts of the United States. When this is done it readily becomes apparent that the highest mortality has been in the Rocky Mountain States. The West North Central group have been next in order. The South Atlantic and Gulf Coast States have experienced the lowest mortality of any group of states in the country.

It has been assumed that the excessively high mortality rates in the Rocky Mountain region are due to delay in operative procedures because of transportation of patients over long distances. Probably this is one of the factors accounting for the high rate but there is evidence which suggests that appendicitis occurs more frequently in this region. The evidence also suggests a lower incidence in southeastern states.

Louisiana lies in the region where mortality from appendicitis has been comparatively low as compared with other parts of the country. The knowledge of this fact should not minimize the importance of the disease as a matter of local concern. Since there has been no decrease in mortality in this state during the past decade it becomes a health problem of vital importance. Approximately 300 deaths occur each year, of which number almost three-fourths are among white persons. In passing it may be said that appendicitis mortality rates are generally higher among white than colored persons. Like cancer it appears to be one of the perils to which more highly developed peoples are subjected.

Appendicitis occurs most frequently in young people from 10 to 30 years of age. Approximately 50 per cent of all cases as reported in several large series occurred in these two decades of life. It is reported less commonly at the extremes of life; i.e., in infancy and in old age. In general, the per cent of cases is about three or four times higher at 20 years of age than in infancy and after 60 years.

It is an interesting fact that case fatality rates, i.e. the percentage of deaths among persons who develop the disease, are lowest in the ages when appendicitis occurs most

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frequently. In early life when a small percentage of the total cases occur, case fatality rates are relatively high. The rates decline and remain low until about 30 years of age after which time the fatality increases rapidly until it reaches the maximum among persons over 60 years old. Under 10 years the fatality rate is about 8 per cent; at 20 years about 2 per cent; and after 60 years it reaches the maximum of about 25.

The statistical data in this paper bear out the importance of early diagnosis and proper treatment of appendicitis in young children. A more adequate appreciation of its seriousness is necessary to bring about a reduction of mortality in the first decade of life.

Among elderly people the problem is still more serious from the standpoint of fatality rates. Resistance to infection and recuperative powers have decreased in old age so that any operative procedure becomes hazardous to life. Fatality rates indicate that the chances of dying among those who develop appendicitis after 60 years of age is about one in four, as against one in fifty at 20 years.

During the past 15 years there has been some increase for the country as a whole in mortality rates as based on the number of appendicitis deaths per 100,000 of population. Most of this increase appears to have been among persons in middle and old age. In certain states any decrease which has occured appears to have taken place among young persons.

In summarizing, permit me to point out again that appendicitis mortality rates have been highest in the Rocky Mountain States, and that Louisiana lies in the region of comparatively low mortality. Appendicitis occurs most frequently from 10 to 30 years of age. The greatest percentage of deaths occurs in old age and in very young children.

THE PART PLAYED BY THE SURGEON IN LOWERING THE MORTALITY OF ACUTE APPENDICITIS

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The discussion of the part played by the surgeon in lowering the mortality in acute appendicitis has rightly been placed toward the last in this symposium. Although acute appendictis is primarily a surgical disease, the surgeon is frequently the last person to assume the management of such cases.

The diagnosis of acute appendicitis has frequently already been made or has become quite definite by the time the patient is first seen by the surgeon, but in many instances in which the diagnosis is so evident the case is no longer one of simple acute appendicitis, but one in which one or more complications of the condition has developed.

When the surgeon has not seen the patient first, but is called in consultation, it is important that he take his own history and make his own phsical examination, including a rectal and possibly a vaginal examination, either or both of which latter may intentionally not have been done previously. A repetition of the abdominal examination after the patient has been anesthetized and when the abdominal muscles are relaxed will sometimes give additional information which may make advisable a change in the plan of abdominal wall incision or even some more important change of precedure.

It is only too well known that the general mortality rate in acute appendicitis is proportionate to the promptness with which removal of the diseased organ is accomplished, but if the surgeon is to avoid improperly planned operations, reasonable delay for the purpose of adequate observation or preparation of the patient before operation is frequently advisable. Certainly under no circumstances should the surgeon permit himself to be hurried into operating upon a patient simply because someone before him has made the diagnosis of acute appendicitis. Although reasonable delay for the purpose of further study is often justified and

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necessary, operation frequently must be resorted to merely on suspicion of acute appendicitis, and in doubtful cases the surgeon must persist in his positive advice that immediiate operation be performed, even following the question frequently put to him by the patient and his relatives, "Are you sure the patient has acute appendicitis and are you sure that he needs an immediate operation?"

Much of what the surgeon can accomplish in lowering the mortality rate in acute appendicitis depends upon his ability to judge and act wisely in the management of cases of complicated acute appendicits for it is this group of cases which is responsible for the present high mortality rate. There is but one form of treatment for early or moderately advanced acute appendicitis; i. e., appendectomy. After the development of complications, however, immediate operation with removal of the appendix is associated with such a high mortality that some form of conservative treatment is now generally accepted as advisable in many complicated cases of acute appendicitis, especially those cases of acute appendicitis which have developed diffuse peritonitis. Under the latter circumstances conservative treatment, although tedious and trying for the patient and his family as well as for the surgeon, has proved to serve best the interests of the patient. In some complicated cases of acute appendicitis it may be proper to perform an immediate incomplete operation such as drainage of a localized appendiceal abscess without removing the appendix. When diffuse peritonitis is present, entirely conservative treatment is advisable when the patient is first seen, and consists of elevation of the head of the bed, allowing nothing by mouth, administration of fluids intravenously or subcutaneously, the giving of liberal doses of morphine, application of heat to the abdomen, and the employment of an indwelling gastric catheter attached to some type of suction apparatus. Patients who are receiving conservative treatment for peritonitis resulting from acute appendicitis must be constantly and closely observed for the development of residual abscesses, which must be drained. The presence of a residual clinical abscess, although usually detectable by ordinary clinical methods, may sometimes be better demonstrated by means of x-ray examination. The campaigns and drives to reduce mortality in acute appendicitis will, it is hoped, result in earlier recognition and operation for acute appendicitis, so that there will be fewer occasions for the employment of incomplete operations or conservative treatment.

In addition to the cases of acute appendicitis with complications present at the time the patient is first seen by the surgeon and in which no immediate operation is done, it frequently happens that complications develop in cases in which immediate appendectomy seemed advisable and was performed.

The necessity of restoring to a second operation is always more or less distressing to the patient, to the family, and to the surgeon, but surely there can be no compromise, for the expectant or watchful waiting policy under such circumstances too often leads to death of the patient.

The surgeon may further contribute to the lowering of mortality of acute appendicitis by the proper choice of anesthesia for there can be little doubt that the outcome in at least some cases of acute appendicitis is determined by the anesthetic employed. I mention this particularly because of the frequency with which patients or their family express a decided preference for an anesthetic of their own choice, sometimes to the point of influencing the surgeon contrary to his original and probably better judgment in this respect.

Preoperative determination of the probable position of the appendix, i.e., whether retrocecal, pelvic, in the right iliac fossa, or elsewhere, should be attempted as this may make possible the more advantageous placing of the incision in the abdominal wall. Although there is much difference of opinion as to the best type of incision, and although there can probably be no single best type of incision for all cases, the aim in all instances should be to make an incision which affords most direct approach to the appendix, which is of sufficient size to permit adequate exposure, and which will facilitate deliberate and careful operative procedure. As was discussed in the instance of anesthesia, preference of the patient in regard to location or

type and size of the incision should never be permitted to influence the best judgment of the surgeon.

The surgeon can further favorably influence the mortality in acute appendicitis by thoughful postoperative care of the patient in respect to administration of fluids, prevention and treatment of the adynamic ileus frequently associated with acute appendicitis, the control of pain, and the prevention of vomiting.

Although acute appendicitis is certainly finally a surgical disease, it is essentially a public health problem which can be solved only by intelligent cooperation between the public, practitioners in the various fields of medicine, and surgeons. Reduction of mortality in acute appendicitis is fundamentally dependent upon education of the public in respect to the seriousness of the problem, the importance of early diagnosis, and the advantage of early surgical intervention, even in doubtful cases.

THE PRESENTATION OF ACUTE APPENDICITIS IN STANDARD TEXT-BOOKS AND SYSTEMS*

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WITH

ELIZABETH M. McFETRIDGE, M. A.
NEW ORLEANS

As part of their campaign to lower the death rate of acute appendicitis in that community, the committee of the Philadelphia Medical Society undertook a survey of standard textbooks, monographs and systems, to determine how accurately the subject of acute appendicitis was presented in them. Our committee has undertaken a similar survey, and we regret to report that we have come to the same conclusion as they, that the presentation is neither adequate nor accurate.

We investigated in all twenty-two books, five issued between 1893 and 1914, five between 1926 and 1929, and twelve between 1930 and 1936. The earlier books we had intended to use merely as a standard of comparison, but we found at least one of them considerably more alive to the seriousness of acute appendicitis than several very recent texts.

We were not surprised to find in these very early books exactly what the Philadelphia committee found in their survey, that the symptoms of peritonitis rather than the symptoms of appendicitis were stressed. It was quite definitely stated in one or two that perforation, gangrene and peritonitis are initial pathologic changes. It is surprising and disheartening, however, to find that error perpetuated, at least by implication, in two quite recent texts. The mortality of acute appendicitis is not likely to be lowered while the teaching is permitted anywhere that the manifestations of its complications are the initial manifestations of the disease.

We were not surprised to find in the early texts lengthy discussions of typhlitis, but we were frankly surprised to find that out-moded disease and its associates, peri-typhlitis and epi-typhlitis, listed as symptoms of acute appendicitis in books published in 1931 and 1933. One of those contributions was by one of the most vigorous advocates of prompt diagnosis and immediate operation in acute appendicitis, and if he opens his discussion with so misleading a statement, if he so far strays from the teachings of Reginald Fitz, how can his own pupils be expected to follow the right path?

It is not surprising to find in the early texts the statement that the diagnosis of acute appendicitis is "rightly regarded as easy." It is not surprising to find in them very little about one of the most treacherous considerations in this disease, that the clinical symptoms frequently furnish not the smallest indication of the severity of the pathologic change. It is surprising, however, to find modern authors laying very little stress upon diagnostic difficulties, to find them failing to emphasize the confusing clinical picture and the fact that any single symptom or set of symptoms may be absent in any case. The repeated statement in quite recent books that the picture of acute appendicitis is usually characteristic is very misleading and actually dangerous. The surgeon, who must pay for the diagnostic errors of his medical confrères, as well as for his own, knows how sadly untrue that generalization is.

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Decidedly more correct is the statement of one recent writer, that the emphasis upon the classical picture of acute appendicitis has been responsible for many deaths.

We note in the recent texts an increasing tendency to explain the variations in the clinical course of acute appendicitis entirely on the basis of variations in the position of the appendix, and we view it with disfavor. That those variations play a part, and an important one, can not be gainsaid. That they account for the whole picture is entirely untrue. A great many other factors, some of them inexplicable, are equally important. Nor does variation in position always produce variation of symptoms. I can recall two patients I have personally operated on within the last year, in both of whom the clinical course was absolutely typical, but in both of whom I literally picked the appendix off the under surface of the liver.

It is not surprising to find in the early texts little or nothing about the risks of cathartics in acute appendicitis. One author, advocating medical treatment, advises against them on the ground that they increase peristalsis and do no good. Another, who states the aims of medical treatment as the prevention of perforation and the development of a plastic peritonitis, seems likely to achieve the reverse results by his advice to give purgatives at frequent intervals. But that was a more benighted day. We know now that purgation and perforation and peritonitis walk hand in hand. It is the more curious, then, to find most modern authors mentioning cathartics only in passing. They increase the pain, they are responsible for many cases of peritonitis, they confuse the diagnosis, these things are mentioned, but with no very strong conviction. One widely used text, which devotes more than 10 per cent of the space allotted to acute appendicitis to a discussion of its historical phase, quotes Fitz's original remarks on purgation, but scarcely mentions the subject again. Small wonder internes are still found who prescribe purgatives for abdominal pain. In view of the frequency with which purgatives are taken, and the fact that at least occasionally they are still prescribed by the profession, it seems to us that this phase of acute appendicitis deserves much more forceful treatment.

It is not surprising to find in most of the early texts no very strong convictions about the promptness with which operation should be undertaken. "The probable course of the disease," says one of these writers, "can be determined at the end of two to four days, and the surgeon can then decide what to do." That has a quaint sound to modern ears, but some modern authors are equally quaint. In a widely used textbook, which has gone through many editions, one finds the very correct statement that the future of any case of acute appendicitis is clouded with uncertainty and the patient's condition may become desperately grave at any moment. With complete inconsistency, however, the author provides for operation anywhere from six to thirty-six hours after the patient is first seen. In all the texts, it seems to us, there is too much emphasis on the time element, forty-eight hours apparently furnishing the dividing line between cases in which immediate operation is demanded and those in which expectant treatment is justified. The experienced surgeon, however, knows that he cannot be guided by any such sweeping generalizations, and the more experienced he is, the more cautiously does he employ expectant treatment, regardless of the time element. One modern author states that children should never be operated on between the third and fifth day, this being the "septicemic" period. Another opens his discussion of treatment with the statement that many different views about it have been expressed, a catholicity of oulook which has no justification in a disease which is preeminently surgical. In only a few books can one find the forthright statement that early operation is justified, even on suspicion, and that it remains justified even if the appendix proves to be not seriously diseased. Those statements would be more frequent if one remembered, as one bold author puts it, that the sick appendix is a potentially perforated bowel and should be so regarded.

A surprising number of texts open their discussion of treatment with a description of nonsurgical therapy. The fact that they specify the circumstances under which it is to be used,

that they distinctly limit its indications, and that they state later that appendicitis is preeminently a surgical disease, does not mitigate the bad psychology of such an introduction. Almost without exception chronic and recurrent appendicitis are discussed under the same heading as acute appendicitis, a custom which, we believe, has much to do with the light-hearted fashion in which so many students are prone to regard acute appendicitis. The acute and chronic varieties are dissimiliar conditions and should be so regarded. Almost none of the texts mention the important contribution of Wilkie on the subject of obstructive appendicitis. The single book which does emphasize that variety bases the discussion of the pathology entirely on the changes due to fecal concretions and foreign bodies, a factor no longer considered very frequent. The overlooking of Wilkie's work explains such statements as that perforation is rare in adults under twenty-four hours, and gives rise to a false and entirely unwarranted sense of security. Few books mention the serious character of acute appendicitis in old age, though most of them emphasize the added risk in extreme youth. Very few stress the significance of a sudden cessation of pain as indicating perforation or gangrene. Finally, we consider misleading and dangerous the inclusion of the roentgen ray as a possible diagnostic method in acute appendicitis. Only in the late stages of peritonitis, when it is rarely necessary, is the flat plate of value, while the giving of a barium meal in any case of suspected acute appendicitis cannot be too strongly condemned. All references to roentgen ray diagnosis should, we believe, be deleted from all discussions of acute appendicitis.

A recent textbook discussion of appendicitis begins with the statement that as long as the mortality remains what it is, all of us have something to learn about it, which reminds one of Lord Moynihan's statement, that concerning acute appendicitis wisdom has not yet descended upon us all. A textbook written in 1914 states that acute appendicitis is frequent, serious, alarming, multiple in its manifestations and phases, demanding heroic measures for its cure, as clearly a surgical disease as a broken leg, a disease which demands the services of a surgeon as soon as it is suspected, a disease in which medical treatment is relegated in the best practice to the limbo of contemptuous oblivion. Those flat-footed statements might have been uttered by the late John B. Murphy, and they ought to be imitated by all writers on the subject of acute appendicitis. Our quarrel with the books we have investigated is that they are not convincing, that they do not speak out strongly enough on such matters as the variable symptom complex of acute appendicitis, the dangers of purgation and of delayed surgery, and the serious nature of the disease. They do not, in brief, convey any notion of the treacherousness of the disease, of its inherently serious character, and of the urgency of treatment.

We take the position that any contribution to the subject of acute appendicitis which claims to elucidate it for students or practitioners should emphasize these points: its frequency; its actual and potential seriousness; the frequent disproportion between its clinical manifestations and the pathologic changes present; the high proportion of atypical cases; the resulting difficulties of diagnosis; the grave risk of purgation; the importance of prompt surgery, on suspicion if a definite diagnosis cannot be made; its increased risk in youth, old age and pregnancy. If these points are made clear, we are willing that much else should be omitted. Yet among the books we investigated we found none that stressed all of these points, and only three or four which in our opinion treated the subject at all adequately. We agree with the Philadelphia committee, therefore, that our textbooks, systems, encyclopedias and monographs should be largely rewritten.

THE MORTALITY OF ACUTE APPENDICITIS IN THE HOSPITALS OF NEW ORLEANS; A REPORT*

When the Committee on Longer Life Week determined to investigate the statistics of acute appendicitis in the hospitals of New Orleans, it was our impression that the figures would give us no cause for pride. Actually we had no idea that they would be as bad as they turned out to be. And at that, they are really worse than appears from this report, which includes only surgical cases and makes no provision for patients who died outside of the hospital or patients who died in the hospital without surgery, usually because they were admitted too late for surgery to help them.

These are the facts, then, concerning the surgical cases of acute appendicitis in eight New Orleans hospitals, Baptist, Charity, French, Flint-Goodridge, Hotel Dieu, Illinois Central, Mercy and Touro, for the two-year period ending April 1, 1935. The figures are incomplete in some respects. They are not entirely accurate; a competent statistician would probably study them with a questioning eye. But we feel that they represent the situation in New Orleans, regardless of their deficiencies, and they ought to be viewed by the profession, as John B. Murphy once put it, as a blow on the solar plexus. Neither physicians nor patients have the smallest reason for regarding them with complacency.

In those eight hospitals in the two-year period 1848 patients were operated on for acute appendicitis and 107 died, 58 in every thousand, one in every 18. Appendicitis may not be a preventable disease, but it is a disease that is easily curable, and we must seek some explanation why one person in every 18 lost his life from it.

The sex incidence offers no explanation. Among males one in every 24 and among females one in every 14 died, which substantiates the general belief that appendicitis is slightly more frequent but considerably less severe in males than in females.

Racial considerations are always important in the South, and we find in this study that the mortality among negroes, 77 per thousand, was more than twice as high as the mortality in the white race, 34 per thousand. All surgeons of experience realize that acute appendicitis is considerably less frequent but considerably more fatal among negroes. While we have no intention of commenting on the statistics of individual hospitals, we feel it proper to note here that most of the surgical emergencies among this race seem to be handled at the general free hospital rather than at the hospital which admits only negro patients. That fact explains the relatively low mortality at the latter institution and the high negro mortality at the public institution.

The mortality by age groups is most illuminating. Under 13 years of age the mortality was 102 per thousand, or one in every 10. Over 40 years of age it was 146 per thousand, one in every seven. Between those years, however, it was only 36 in every thousand, one in every 33. In these middle years the greatest proportion of cases of acute appendicitis occur, but the disease, though less frequent, is considerably more severe at the extremes of life.

Still we have not discovered why in New Orleans hospitals one person in every 18 died of acute appendicitis. But our next investigations begin to make it clear. They died, first of all, because they delayed seeking medical advice. The death rate in those who were operated on within 12 hours was 21 per thousand; it rose to 28 per thousand after 24 hours, and 42 per thousand after 48 hours, and 122 per thousand after 72 hours. To express it differently, there were 30 deaths in each thousand cases, one in every 33, when operation was done within 48 hours.

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*Read by Nathan H. Polmer, M. D., for the Longer Life Week Committee.

*Compiled by the Longer Life Week Committee from the data on the surgical cases discharged within the two-year period ending April 1, 1935, as submitted to them by Baptist Hospital, Charity Hospital, Flint Goodridge Hospital, French Hospital, Hotel Dieu, Illinois Central Hospital, Mercy Hospital and Touro Infirmary.

but 117 per thousand, one in every 8, four times as many, when operation was done after that time.

In 944 of these cases, slightly over half, the disease was of the simple acute or the acute suppurative variety, the so-called clean case. In that group the greatest salvage of life occurred; only one in every 86 persons died. Some of these patients had delayed seeking medical advice or refused surgery or taken a purgative, but by the grace of God had escaped the consequences of their acts. Most of them, however, had sought help early. In the remaining 904 cases the disease had passed beyond the clean stage, in a few cases because it was of a highly virulent character from the onset, more often because the patient delayed seeking medical advice, or refused surgery when it was first suggested, or took a purgative, or did all three. They also had their reward. One in every nine patients in this group lost his life, more than nine times as many as in the first group, and a great number of those who survived had a stormy convalescence, a prolonged hospital stay, heavy financial expenditures, and frequently, the inconvenience and risk of secondary operations.

In 1319 cases simple removal of the appendix was done. Perhaps in a few cases something more should have been done, just as perhaps something less should have been done in a few of the remaining 529 cases. It is hard to judge from the reports and after the event. But note the difference between the groups. When simple appendectomy was done the death rate was 14 per thousand, one in every 69; when a more intricate procedure was necessary it was 166 per thousand, one in every six, nearly twelve times higher. Quite evidently it is the part of wisdom to submit to operation when simple procedures are still possible.

The second reason why these deaths occurred was because of purgation. Hospital records are notoriously inadequate on this point, and we assume, often erroneously we are sure, that a purgative had not been taken unless it was specifically stated that it had been. Even with that wide margin of error, however, the death rate with purgation was 93 per thousand, one in every 11, against 47 per thousand, one in every 21, when a purgative presumably had not been taken. When the purgative was repeated, the deaths rose to one in seven. Purgation, procrastination, and the resulting perforation explain most deaths from acute appendicitis.

The great majority of these deaths were due to peritonitis and its complications. At least 88 of the 107 can be so classified. Peritonitis is chiefly due to two things, delayed surgery and the taking of purgatives. The solution of the problem, then, would seem clear; prompt surgery in acute appendicitis, and no purgation.

We make these statements the more emphatically because of our study of these records. We had expected that the public institution would show a higher mortality than any private institution. Actually, the mortality there was lower than in any private hospital except one, an institution which ministers to a selected clientele of able-bodied men, in the prime of life, and carefully supervised medically. The patients in the public institution had taken more purgatives than in the private institutions, though at that the discrepancy is not very marked. But the patients in the private institutions were the ones who delayed surgery when it was offered. More purgation in one institution was more than offset by more procrastination in another, and the end result was too often the same, procrastination or purgation, or both, perforation, peritonitis and another fatality.

Both profession and public would do well to ponder upon this report. Too many physicians regard appendicitis far too casually; it is a disease to be respected and feared. Surely, too, the public should be taught something of its dangers. Lay persons should be taught that all abdominal pain is a danger signal, since it may be the first symptom of acute appendicitis or some other very serious disease. They should be taught to avoid purgation as they would poison under these circumstances. They should be taught to call a physician for abdominal pain which lasts for any length of time, an outside limit

of four hours. They should be taught to accept surgery when it is offered to them by a conscientious physician who realizes, as all conscientious physicians do, that surgery is always the lesser of two evils.

Very few deaths from acute appendicitis will occur if the profession and the public alike bear these considerations in mind. Prompt surgery and no purgation are the solution of the problem. Other considerations cannot be ignored, but no others really matter.

GENERAL STATISTICS FROM NEW ORLEANS HOSPITALS

1848 Cases, 107 deaths, 5.8% (58 per thousand).
Largest number, 1034 cases with 48 deaths, 4.7%.
Smallest number, 34 cases with 2 deaths, 5.9%.
Highest mortality 12% (18 deaths in 159 cases).
Lowest mortality 2.7% (2 deaths in 74 cases).

PATHOLOGY

Acute and suppurative	944 cases	11 deaths	1.2%
Rupture and gangrene	777 cases	68 deaths	10.6%
Abscess	127 cases	12 deaths	9.4%
Total complicated cases	904 cases	96 deaths	10.6%
Total cases peritonitis	307 cases	77 deaths	25.0%

From these figures it is evident that a person with appendicitis advanced beyond the simple or clean stage stands roughly 9 times more chance of dying than a person with the simple or clean disease.

SEX

Male	1193 cases	60 deaths	5.0% (50 per 1,000)
Female	65 cases	47 deaths	7.2% (72 per 1,000)

RACE

White	1552 cases	84 deaths	5.4%
Negro	296 cases	23 deaths	7.7%

The negro mortality in all the city hospitals is thus 1½ times greater than the white. If the figures are made up only on the three hospitals which treat negro patients (Charity, Flint-Goodridge, Illinois Central), they are

White	846 cases	29 deaths	3.4%
Negro	296 cases	23 deaths	7.7%

This makes the negro mortality more than twice as high as the white.

AGE

1 to 13 years	266 cases	27 deaths	10.2%
13 to 39 years	1307 cases	40 deaths	3.6%
Over 40 years	275 cases	40 deaths	14.6%

The mortality under 12 years is thus almost 5 times higher and the mortality over 40 years 7 times higher than it is in the middle years.

DURATION

To 12 hours	336 cases	7 deaths	2.1%
To 24 hours	531 cases	15 deaths	2.8%
To 48 hours	359 cases	15 deaths	4.2%
To 72 hours	196 cases	24 deaths	12.2%
Over 72 hours	334 cases	38 deaths	11.6%

To state it differently:

To 24 hours	867 cases	22 deaths	2.5%
Over 24 hours	981 cases	85 deaths	8.7%
	Or		
To 48 hours	1226 cases	37 deaths	3.0%
Over 48 hours	530 cases	62 deaths	11.7%

From these figures it is evident that a person operated on after 24 hours stands 3½ times more chance of dying and a person operated on after 48 hours stands 4 times more chance of dying than persons operated on within 24 or 48 hours after the onset of their illness. In 92 cases, in which there occurred 8 deaths, 8.7%, the duration of illness was not stated.

PURGATION

(Based on cases in which definite statements were made)

Purgative taken once	429 cases	40 deaths	9.3%
Purgative repeated	79 cases	11 deaths	14.0%
Complicated with purgation	357 cases	38 deaths	10.6%
Purgative apparently not taken	1419 cases	67 deaths	4.7%

From these figures it is apparent that a person who has taken a purgative is twice as likely to lose his life as a person who has not, and more than 3 times as likely to die if the purgative is repeated.

In 10 cases the purgative was prescribed by a physician.

PROCEDURE

Appendectomy	1319 cases	19 deaths	1.4%
with drainage	287 cases	47 deaths	16.3%
with enterostomy	172 cases	27 deaths	15.7%
Incision and drainage	60 cases	10 deaths	16.6%
with enterostomy	3 cases	0 deaths	00.0%
Other procedures	7 cases	4 deaths	57.1%
Procedures other than appendectomy	529 cases	88 deaths	16.6%

It is evident from these figures that when the disease is simple enough to require only removal of the appendix, 14 persons per 1,000 die, against 166 when the stage of the disease necessitates other procedures. That is, the person whose disease necessitates more serious procedures has a 12 times greater chance of dying.

OTHER FACTS

General anesthesia	805 cases	56 deaths	7.0%
Spinal	1025 cases	43 deaths	4.2%
Local	13 cases	6 deaths	46.2%
Other types	5 cases	2 deaths	40.0%

These figures cannot be used absolutely, owing to the routine use of certain types of anesthesia in certain institutions, in which different types are used only for seriously ill patients.

Right rectus incision	437 cases	37 deaths	8.5%
McBurney	1291 cases	51 deaths	3.9%
Various	120 cases	19 deaths	15.8%

The comment just above applies to incisions from the point of view of individual surgeons.

Causes of death: peritonitis and its complications—85; penumonia—6; cardiac—4; embolism—2; anesthesia—2; subphrenic abscess—2; shock—2; mesenteric thrombosis, "liver death", obstruction, gangrene of cecum—1 each.

Pain was the first symptom in all but 4.5% of the stated cases. Other first symptoms listed included nausea and vomiting chiefly, headache, fever, malaise, diarrhea, anorexia.

SUMMARY

In 8 New Orleans hospitals, in the 2-year period ending April 1, 1935, one in every 18 persons with acute appendicitis died.

One in every 86 patients died when the disease was of the simple variety, but one in every 9 died when it had become complicated.

One in every 24 males died, and one in every 14 females.

One in every 18 white persons died, and one in every 13 negroes.

One in every 10 persons died in the age group 1-12 years.

One in every 33 died in the age group 13-39 years.

One in every 7 died in the age group over 40 years.

One in every 39 persons died when operation was done within 24 hours, and one in every 33 persons died when operation was done within 48 hours, but one in every 8 died when operation was done after 48 hours.

One in every 11 persons died who took a purgative, and one in every 7 who repeated the purgative, against one in every 21 who apparently did not take a purgative.

One in every 69 persons died who needed simple removal of the appendix, but one in every 6 who needed more complicated operations.

To avoid confusion, the nearest whole numbers have been used in all calculations.

These data were collected and the report prepared by a sub-committee of the Longer Life Committee consisting of Frederick F. Boyce, M. D., Paul B. Cameron, M. D. and Elizabeth M. McFetridge, M. A.

LOBAR PNEUMONIA*

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Lobar pneumonia, an acute specific systemic infection, usually runs a characteristic febrile course, terminating by crisis in five to ten days. The average case presents for treatment a toxemia, associated with severe bacteremia, pulmonary solidification, partial respiratory obstruction and secondary strain on the heart. In 97 per cent of cases the pneumococcus of Sternberg and Frankel is the responsible organism.

No age is exempt. The disease occurs in the newborn and is often the terminating disease in the aged. Up to the sixth year of life the predisposition is marked, then diminishes to the fifteenth year and increases for each decade thereafter. Pneumonia occurs more frequently in males than females and is common to all races. In the South it is more fatal to the colored race than in the white. The disease is more common in cities and crowded communities than in rural districts and any state of debility renders the individual especially susceptible to the disease.

One attack seems to predispose to subsequent infections. The disease is more common in winter, and particularly the latter part of winter before spring. It is likewise more frequently seen in cold climates than warm, due to the lowering of resistance dependent upon chilling and changing temperature.

The pathologic changes in the lungs attacked by pneumococcus are similar to those of any other tissue in a state of acute inflammation. First there is invasion by the micro-organisms, followed by rapid influx of blood in the infected area, producing a stage of red hepatization which is followed by a stage of resolution.

The symptomatology of lobar pneumonia is probably more typical than any other one infectious disease. Ushered in by severe chill which lasts from 15 to 30 minutes there soon follows a definite rise in fever. If the rectal temperature is taken the patient will show fever during a chill. Associated with this is general pain over the body, usually marked headache succeeded in a few hours by a sharp, agonizing pain on the affected side. Ultimately there develops a short, dry, painful cough that brings up a thick, most characteristicly tenacious sputum, slightly blood tinged. The respirations are markedly increased out of proportion to the pulse rate so that instead of a ratio of 1 to 4 it is often 1 to 2 or less. The pulse is full and bounding unless there is cardiac involvement.

As the symptoms are so characteristic, likewise the physical signs are unequivocal. The patient lies on the affected side and the cheek on that side usually shows a red blotch. Herpes are present on the lips. The whole appearance of the individual is that of one seriously ill. The signs over the lungs briefly are: the affected

*Read before the Louisiana State Medical Society, Lake Charles, April 27-29, 1936.

side, measuring with a tape, is found to be larger than the other; Skodaic resonance is heard above the area of engorgement which in turn gives a high pitched, dull to flat note; breathing early is often suppressed and at the end of inspiration are heard fine crepitant rales. When consolidation is complete blowing tubular (bronchial) respiration is heard; as the exudate softens and approaches resolution the rales reappear and the rale indux becomes the rale redux. Tactile fremitus and vocal resonance are markedly increased in the stage of consolidation. Frequently the faintest whisper can be heard with the stethoscope.

TREATMENT

For the purposes of this paper the treatment of the patient sick with pneumonia may be divided into three sections: (1) general care; (2) management of special symptoms; (3) specific and non-specific measures.

1. *General Care*: Regardless of how authorities differ in estimating the value of particular forms of treatment, all are unanimous in their opinion as to the importance of proper general care of the patient suffering with pneumonia. An intelligent nurse is as necessary as an intelligent physician. Preferably the bed should be a simple hospital bed with a firm mattress. The room should be well lighted and well ventilated, free of unnecessary furniture and draperies. The mattress should be protected by a rubber and draw sheet and there should be an abundant supply of clean linen. The patient should be kept warm but not burdened with unnecessary covering. The temperature of the room should be from 60-70° F. if possible, and for the very young or very old slightly warmer.

The open-air method of treatment is valuable if a patient can be kept warm. It is not very practical in the average home. The position in the bed is of importance. While usually the patient rests better in the horizontal position, the position should be changed at frequent intervals to avoid hypostatic congestion. In elderly people there is no reason why the head and shoulders should not be raised if it adds to the patient's comfort. In most instances the heart of the patient with pneumonia ultimately decides the outcome. For this reason great care should be taken to conserve cardiac reserve. The bed pan and urinal should be used in all cases. Physical examination of the chest after the first or second day to establish accurate diagnosis causes the patient needless exertion and serves no useful purpose. The temperature taken by rectum is thoroughly reliable.

Care of the body is much the same as with any acute illness. It should be kept scrupulously clean. Alcohol rubs followed by talcum powder soothes the skin. Ice caps to the head may quiet the nervous system, at least they often give comfort to the patient. The extremities should be kept warm; apply external heat if necessary. Careful hygiene of the mouth largely avoids oral sordes and decreases the liability to secondary mixed infections. The bowels should be kept open, preferably by a simple enema. A brisk cathartic at the onset certainly seems to limit subsequent intestinal toxemia.

Diet, because of the limited course of the disease, need not be as complicated as in an infection of longer duration. The food should be largely liquid in character and given in frequent small quantities rather than over-loading the stomach. Milk, eggs, broth, purees, liquid cereals and fruit juices meet the requirements. A cup of hot black coffee once or twice a day gives comfort to most adult patients. Opinion is divided on the use of alcohol. All authorities agree that it has some food value given in small quantities, but most of them fear secondary depressing action when used as a quickly acting stimulant. Water or liquids should be given freely, at least two quarts a day, but in small, often repeated quantities.

In delirium or in patients who nourish badly glucose in 5 to 25 per cent solution is often useful. This should be given in small to moderate quantities, usually 250 c.c. of 5 per cent solution sufficing. Excessive amounts may increase the tendency to pleural effusion and may embarrass the patient's circulation and respiration.

2. *Management of Special Symptoms*: There are certain cardinal symptoms common to all cases of lobar pneumonia and the method of treating them is almost as varied as there are authors and books. Success in any one method seems to be dependent upon the knowledge and

skill of the physician using it. Where one may succeed another will fail.

A *chill* is generally the first symptom to present itself. If the doctor is called immediately which is rarely the case, he will find efficient hot drinks such as tea, coffee or a glass of hot water containing a teaspoonful each of aromatic spirits of ammonia and compound spirits of lavender. Hot water bags to the body may cut the chill short; morphine, with atropine in the usual dosage given hypodermatically, is almost specific.

Pain in the chest is dependent upon pleurisy. The patient should be given one grain codeine hypodermatically or if very severe one-quarter grain morphine may be given. If there is a competent nurse on duty codeine can be repeated as often as necessary. If not, the patient may take repeatedly by mouth a combination of codeine and aspirin, amytal or any of the many analgesics that do not possess a markedly depressing action on the circulation.

Local applications to the chest are multifold in kind and character. Some praise them to the sky and others condemn them as unscientific and bunglesome. Strapping the chest with adhesive tape over the affected lung limits expansion and pleural separation and adds comfort to the patient. The adhesive is hard on the skin, which should be scrupulously watched. A tight binder made of cloth or a towel tied snugly around the chest may suffice in mild cases. A mustard plaster applied at regular intervals to the chest over the bronchial tubes has many advocates. Blistering, of course, should be avoided. The continuous application of mustard and flax seed meal, strength of 1 to 10 and kept hot often relieves the pain. Turpentine stupes and poultices of meal, beans, cabbage and lettuce leaves, slippery elm bark or any other substance which maintains heat have been tried. I personally, although my doctor friends chide me about it, like antiphlogistine applied thick and hot daily until the fever falls. Whether or not it hastens the process of the disease I cannot say, but I know that if properly applied it adds comfort to the patient and largely avoids the use of narcotics. In involvement of the lower lobes the pain is not infrequently referred to the abdomen, particularly in children. The physician should guard against mistaking this for some abdominal condition, on the other hand appendicitis does frequently occur with pneumonia. I have seen four cases in my own practice proved by appendectomy.

For *cough* codeine, along with the remedies suggested for pain, is the anchor rock. It may be given hypodermatically or combined in a cough syrup with other sedatives and expectorants. A few drops of syrup of ipecac added to the cough mixture prevents the mucous membranes of the throat and bronchi from becoming too dry. In children small doses of Dover's powder at three or four hour intervals the first few days quiets the cough, relaxes the skin and gives the child a rest. At about the time of resolution ammonium carbonate provokes cough, helps to liquify the thick tenacious sputum and is a mild respiratory stimulant.

Fever in pneumonia rarely requires active interference and in itself is one of nature's provisions to control the infection. The pneumococcus does not thrive in a temperature of 104° F. Proper feeding, bathing and sponging and the avoidance of adbominal distention serve to keep the temperature within reasonable bounds. A continuous or remittent fever of 104° or over cannot be overlooked and may produce cerebral symptoms. Sponging with alcohol or weak vinegar water whenever the temperature reaches 102° is nearly always sufficient to control hyperpyrexia. If the heart is weak cold applications should be used with care. Often warm sponging of the body, with an ice-cap to the head, is effective. The tub bath should be used only as a last resort; it exhausts the patient and may cause a fatal collapse. The use of antipyretic drugs may at times be indicated for a brief period. Many of these are depressing and should be used guardedly.

Abdominal distention is not likely to cause concern if the intestinal tract is thoroughly emptied at the beginning of the sickness. If it occurs and becomes marked there may be serious interference with the circulation and respiratory movements. With the slightest sign of distention the diet should be restricted; milk and fruit juices withheld. In mild cases glycerine suppositories are helpful. Hot turpentine stupes, on and off at 20 minute intervals, often aid. Insertion of a rectal tube may allow the gas to

escape; it may be left in indefinitely. High or low enemas may be given, using of course a bed pan. The enema may be plain soda water or drugs which stimulate peristaltic action may be added, as turpentine, asafetida, soda and molasses, or mineral oil and agar preparations. Eight ounces of pure glycerine may be instilled six or eight inches into the rectum or it may be given ahead of a water enema. It is very effective. In our hospital we have found one of the very best methods of controlling this symptom is the "Harris drip" which consists of a gallon douche can one-half filled with warm solution of 5 per cent glucose in bicarbonate of soda. The can is placed on a table beside the bed at the level of the symphysis pubis, about two feet of tubing is attached to the outlet and this is attached by a glass connecting tube to an ordinary rectal tube which is introduced about six or eight inches. The fluid runs into the rectum and sigmoid until it has reached the level of the fluid in the can which insures that a single column of fluid fills the can, tube and sigmoid. If the distention is high, gastric lavage, using a duodenal tube through the nose, is beneficial. Of the drugs used to control this symptom surgical pituitrin and atropine are most popular.

For *delirium* ice-caps to the head and sponging of the body with alcohol suffice in mild cases. Codeine and morphine probably occupy first place amongst drugs. Recently the barbital group, primarily nembutal, has become popular. Other drugs used are chloral, whose action on the heart should be carefully watched, the bromides and such coal-tar derivatives as phenacetin. Paraldehyde, and recently pantapon and dilaudid have become popular. In alcoholics be sure that the delirium is not the result of sudden withdrawal of liquor. I have seen at least one case in which this has happened.

Crisis requires close watching. Rest, quiet and assurance to the patient that he will soon be better are often sufficient. Use heat to the extremities and stimulate, as indicated by the reduced temperature and state of circulation. Remember this is nature's process and the physician is only called upon to prevent too sudden change and collapse.

3. *Specific Treaments*: This may be divided under the headings of: (a) drugs; (b) special methods and (c) the biologics.

Drugs may be listed as heart stimulants, diffuse stimulants and respiratory stimulants. Of the *heart stimulants* there are two distinct schools of thought in regard to the use of digitalis, the one teaches that inasmuch as death in pneumonia is often due to toxic heart changes it is the safe and sensible practice to strengthen the heart muscle before weakening occurs. Hence digitalis is administered early in the disease. The other school teaches that the heart should be treated in pneumonia just as it is in any organic disease, withholding the drug until nature seems to be failing. Undoubtedly many cases recover without any stimulation. It matters little what form of the drug is used so long as the effect is produced. There are many excellent preparations of the tincture, powder and ampoule on the market. Nitroglycerine should never be used indiscriminately. It may do harm, but it may have value in the arteriosclerotic by overcoming peripheral resistance and lessening the tension in the hardened arteries against which the heart is laboring. Caffein sodium benzoate is valuable and effective in threatened collapse. It should be used in doses of from 1 to 4 grains and repeated at liberty. The use of strychnine is dubious. It is somewhat of a stimulant to the respiratory centers and has more or less general tonic value. Strophanthin has no particular advantage over digitails and is not as reliable. Adrenalin chloride, injected into the muscle or given by hypodermatoclysis, is a very potent stimulant to the heart as it raises arterial pressure. It is dangerous in edema of the lungs. Camphor in oil in doses of 3-5 grains may be injected every one to three hours up to as high as 40 grains a day in cardiac asthenia. Its value is dubious. Sparteine sulphate has been recommended for its effect on the right heart. It often corrects cardiac irregularity in small doses of one-quarter to one-half grain.

Diffusible stimulants sustain the heart force during short periods only. Their effect is evanescent. Most valuable in this group is the aromatic spirits of ammonia and compound spirits of lavender. They should be given in small, often repeated doses.

Respiratory stimulants, used when respiration lags, often tide the patient over. In this group are found such drugs as strychnine, ammonium chloride, coramin and oxygen. Nothing so quickly restores color to the cyanotic as oxygen gas. The cyanosis is probably due to the fact that the hemoglobin is less saturated with oxygen than normal.

Drugs used as semi-specifics: In the hope of bringing into contact with infecting organisms some chemical substances which will hinder its growth and at the same time enhance the bacteriologic and the anti-toxic properties of the blood various drugs have been used with some success.

Thirty years ago quinine was a very popular treatment, being given in enormous doses. Creosote carbonate or creosotal undoubtedly have value. They should be given in 7½ grain doses every three or four hours over a period of several days. Aconite and veratrum viride, the so-called "internal bleeders" enjoy popularity among the followers of homeopathy. They may possibly have some value in the early state of engorgement. Guiacol and pilocarpine are two depressing antipyretics which are generally condemned. Turpentine, phenol and the intravenous use of aniline dyes, especially mercurochrome, have their advocates. Recently a paper was read in Chicago on the intravenous use of 20-33 per cent solution of alcohol in normal saline in which the author claimed to obtain striking results.

Special methods aside from drugs undoubtedly have some virtue in the treatment of pneumonia. Thus the water cure, the open air treatment, venesection and physiotherapy, whether in the form of light, electricity or hot applications, all have their good points.

It is with biologic preparations that there is the most promising outlook in conquering eventually this dread disease. Any attempt to control bacterial infection by specific anti-sera predisposes a knowledge of the type of organism responsible for the infection. The activity of anti-sera may be directed against the living organism resulting in its death or it may be directed against the production of bacterial cells circulating in the blood and lymph. Dochez and Gillespie have shown, however, that pneumococci isolated from cases of pneumonia may be divided into four types of which the first three are specific so far as their immune reactions are concerned. Anti-immune serum produced by the injection of a horse of a species belonging to type I has a specific action against all the members of type I but none on organisms of any of the other types. Likewise the same holds true with the pneumococcus belonging to type II and possibly to type III. In recent years incidentally a large number of additional types of pneumococcus have been isolated for some of which a specific anti-sera has been found effective.

The immediate problem is to determine, after diagnosis has been made, to what type the offending pneumococcus belongs. Sputum, definitely coughed up, is injected in a small amount into the belly cavity of a mouse. In about six hours the mouse is killed, the abdominal cavity washed out, the cells and fibrin thrown out by slow centrifugalization. A suspension of organisms is then obtained and agglutination with various types of serum made. Once the type is determined serum treatment is begun. In view of the fact that more than 50 per cent of patients have type I or II pharmaceutical houses have stocked the market with anti-pneumococcus serum predominating in these two types, although single type serum may be quickly obtained.

In addition to serum therapy other forms of biologic preparations have been tried with varying success, such as vaccines, sero-bacterins and foreign proteins. These are not to be recommended.

CONCLUSIONS

It is safe to state at the present time there is no sure and certain way to treat lobar pneumonia. While some patients seem to respond beautifully to a particular method of treatment, others do not do so well. Again some do well without any particular treatment. Distinct progress is being made in developing a satisfactory anti-serum. It is hoped that some day this method will be so universally and so accurately employed that the mortality of the serious disease will be greatly decreased.

In a limited time for this presentation no attempt has been made to cover all the details

of a subject so voluminous as lobar pneumonia. I can only hope that this brief outline of management of lobar pneumonia may prove helpful to you in the handling of your own cases.

DISCUSSION

Dr. F. W. Harrell (Jennings): We are fortunate to be privileged to hear so practical a paper on a disease as old and ubiquitous as lobar pneumonia. As pointed out by Dr. Smith, lobar pneumonia still remains a disease to be treated symptomatically. Being epidemic and endemic, self limited and terminating abruptly, it should offer problems in immunity that are readily solved. However, we know that this is not the case.

The immunity developing in favorable cases of the disease and the phenomena associated with the crisis has thrown some light on the subject of immunity to the pneumococcus. We know that crisis is not due to sudden loss of virulence of the micro-organisms, nor to a definite anatomical change in the lung. We know that the percentage of positive blood cultures and the intensity of the blood invasion, if there is one, decreases as crisis or lysis approaches. Too, it has been demonstrated that the number of viable organisms recovered from material obtained from lung puncture diminishes even to zero during or after the crisis. A satisfactory explanation has not been offered of the condition responsible for these changes, but it seems that the only antibodies appearing in significant quantities are substances that produce phagocytosis.

Possibly a state of allergy to the pneumococcus may explain many of the manifestations of the disease. The predominating exudative character of the local reaction, its intra-alveolar, non-interstitial localization, and abrupt onset are at least suggestive.

Along with the sundry antibodies, whose contribution and degree of immunity to the pneumococcus has not yet been established, there are also developed the so-called protective bodies. They are highly specific and are usually found in the blood at or just before crisis. In addition to these there are also to be found the so-called soluble substances of Avery. Like the protective bodies they are highly specific for each type of the pneumococcus. They are non-toxic, non-antigenic, but possess the power to neutralize the immune substances developed by the patient. It is formed in the capsule of the organism and enhances its virulence by preventing phagocytosis.

The most important function of the immune bodies then is to prevent the entrance of the pneumococcus into the general circulation thus keep the disease localized to the lung, in which event recovery will probably follow. Contrari-wise if the pneumococcus produces enough soluble substance to neutralize the immune bodies, phagocytosis will be prevented and the patient will die of a pneumococcic septicemia.

For the average physician, specific sera are not practical. He cannot collect the material and have it typed early enough to be of value in the usual case. Again, the technical difficulties in administering so powerful a serum are such that it should not be attempted outside of a well equipped hospital. Its real value has only been proved in type I, and then very early in the disease. Its use does not produce the striking reduction in the death rate that has been claimed for it. Although it is claimed to limit the pneumonic process in the lung, resolution occurs no faster than those cases not receiving the serum, and complications seem to increase following its use, such as empyema and focal infections.

What has been said for the sera holds for the antibody solutions. Though they may avoid serum disease or early serum reactions, they quite regularly cause reactions of the foreign protein type. Since lobar pneumonia has many characteristics suggestive of allergy, it might prove very disastrous to flood the already over-burdened system with more of a foreign protein.

Although many cases of moderately severe pneumonia from which the patient recovers after 6 to 10 days of fever, the pulse is no faster than is consonant with the elevation of temperature, and in some fatal cases it appears that the death is entirely respiratory. However, in at least 15 per cent of the cases the pulse will show some type of irregularity, and again the heart should be regarded as pumping harder because of consolidated areas in the capillary bed. Too, the heart muscle is poisoned by the generated toxins. The picture then is: A poisoned cardiac musculature with an irregularity of rate and rhythm, and possibly a dilated right heart which is receiving insufficient blood and nourishment because of the stretching and narrowing of the coronary vessels. Digitalis then becomes the drug of choice. It should be started the day the diagnosis is made and in sufficient amounts to be of value.

In pneumonia much better results will be obtained if glucose is used as a first rather than a last resort. Possibly because of the anoxemia the stored glycogen is soon consumed. Or possibly the liver is putting its detoxifying function to the front at the expense of its glycogenic function. At any rate the heart is a great user as well as a great store house for glucose, second only to the liver in this capacity.

Dr. H. O. Barker (Alexandria): We have treated about one hundred cases of lobar pneumonia in the last year and have found that we get a great deal of benefit from serum, typing the cases by the rapid method. I think anyone can learn to type them in a short while by a few minutes in-

struction in the laboratory. You can type Nos. I, II, V and VII, and we know most cases in children are type V and VII. We have given this serum with remarkable results, the patients becoming free of fever in 24 and 48 hours. These cases were diagnosed too by roentgen ray, and they were the real pneumococcus, not just supposed to be pneumococcus. They are typed by the rapid Sabin method, which can be done in 20 minutes. The type is distinctive and the serum is specific.

We have treated a great many C.C.C. boys and young men, and find nearly all of them fall in type V or VII. We find old cases will fall under type III, and, of course, we have no serum for that. A great many older people will fall in type I and II, and, of course, we have a serum for those types.

We use Lederle's serum, not the combined. We use serum No. 1 for type I, serum No. 2 for type II. Recently, they put out types V and VII combined, and we now treat pneumonia with this type serum. I cannot see why the manufacturers put them together when formerly they had them separate.

We also get good results with diathermy.

Dr. Allan Eustis (New Orleans): One of the greatest advances in the treatment of lobar pneumonia is early decompression of the lung by introducing air into the pleural cavity. This has been practiced for many years in the treatment of tuberculosis, but was applied in pneumonia several years ago by a Texas physician. I believe that it was the means of saving my son's life. His respiration was 52, pulse 170, with severe pleuritic pains on respiration. In 15 minutes after Dr. Chaille Jamison had decompressed the lung with 500 c.c. of air, all pain had subsided, and respiration dropped from 52 to 32. I have never seen such a spectacular transformation in my life.

Dr. Jamison has had several cases in Charity Hospital where diagnosis was made early and before adhesions had taken place between the pleura and lungs; it certainly relieves the patient. Another advantage of it is that in the early stages when it is difficult to obtain sputum for typing, large quantities are coughed up at once.

Dr. F. R. Frazar (Merryville): I want to compliment Dr. Smith on his paper and also wish to state my experience during the recent epidemic of influenza and pneumonia. I made a diagnosis of pneumonia in about 37 cases, (my records are incomplete). I found it hard to make a differential diagnosis between "flu" and pneumonia on the first visit, unless the consolidation was unilateral, as the symptoms were almost the same, ushered in by chill and high temperature. On several occasions, I made a second visit before finding rales to make the distinction between the two. As to sputum, I found in influenza cases a tenacious sputum with even more blood than in pneumonia, the sputum of pneumonia being of a more frothy nature.

I want to relate the history of a case, I have not seen one like it. A girl of 17 years had a chill, followed by temperature of 106°, and temperature ranged from this down to 102° for eight days. On the evening of the eighth day, it dropped to 100°; on the morning of the ninth day the temperature was 104.4°, and ranged to 103° until the seventeenth day, when it dropped to 96°. The patient recovered. Now the peculiarity of this case was that all the trouble was in one lung, findings being practically in the same area. There is no doubt in my mind that there were two cases of penumonia, one following the other in the same lung.

Dr. Morgan Smith (In conclusion): I am sorry that the time was so limited that we did not get really into the part of the paper that I wanted to bring before the Society. I thank these gentlemen for their remarks. I was interested in what Dr. Eustis had to say about decompression.

This much stands evident: That at the present time there is still no safe, sure way to treat lobar pneumonia. Each man advocates his own method of treatment. Occasionally, we see excellent results when we do not do anything at all. It is difficult to prove the value of any one form of treatment.

There is a great argument going on now as to whether or not serums really do what they are supposed to do. The pneumococcus is an endotoxic germ and it is doubtful if it can be affected by a serum.

In the big camps, they use convalescent serum a great deal and claim wonderful results. There are as many ideas of treatment in pneumonia as there are doctors in offices. The treatment of penumonia gives us something to think about: let us hope some day a method will be developed more sure than it is today.

MYCOTIC INFECTIONS OF THE LUNGS*

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The object of bringing this subject to your attention at this time is to stress the importance of an early diagnosis and prompt effective treatment in time to save the individuals whose lungs are involved in what might be considered an acute mycotic infection. Rare and unusual diseases or conditions should undoubtedly be reported and published as a matter of record, but there is some question as to the wisdom of taking up the time of a number

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of men for such purposes. The condition under discussion is not a rare one, particularly during the period since the World War and in the warmer belts of our own country. It seems to become more prevalent each year and seems to affect all classes and all ages, and is being diagnosed more often than heretofore. Many of us are "tuberculosis conscious" or "lues conscious" in the handling of chest conditions and if more of us become "mycosis conscious" this paper will not have been in vain.

It is not the intention of the writer to go into lengthy discussion of the history, etiology or the bibliography of this subject since many others far more competent have done so before this society from time to time. During the past eight or ten years approximately fifteen cases of lung mycosis have come under the observation of the writer in the capacity of roentgenologist in St. Francis Sanitarium, Monroe. Many of them were spotted by means of roentgen ray studies of cases sent in primarily on suspicion of tuberculosis.

SYMPTOMS

Hemoptysis is frequently the initial indication of onset. Castellanni refers to this as hemorrhagic bronchitis. These patients seek the advice of the physician often in dire distress because they have been coughing and spitting blood. This may vary from tinged or blood flecked sputum to rather massive hemorrhage, They may be fully persuaded in their own mind that they have "galloping consumption" and had not even suspected it before this onset which came on with very little warning. Alarm is written in box car letters on the face. They may not appear acutely ill unless the hemorrhage has been sufficient to deplete the body. The temperature will probably register normal or possibly a slight elevation most likely below a hundred degrees. There may be slight dyspnea or breathing of an asthmatic type. Physical examination of the chest will probably reveal moist or sibilant rales about the hylus, or around the base of the lungs, while all the other physical signs will prove negative.

X-RAY FINDINGS

Fluoroscopic inspection of the chest will give very indefinite findings or possibly nothing on which one would or could hazard a diagnosis. A slight increased infiltration in or about the hylus may be noted and possibly a slight limitation of the expansion may be present. The roentgen ray plate findings are much more definite and conclusive. The absence of tuberculosis is readily established although both diseases may be present in the same individual. Usually there is a marked thickening of the bronchi to one or more lobes while the adjacent lung fields show a rather marked infiltration with gradual fading out in the more distant lung fields. In some cases they may assume a cauliflower like appearance. The picture may closely resemble a bronchopneumonia in the early stage or possibly undergoing resolution. The apparent well being of the patient along with the history will rule out the possibility of pneumonia. Many eminent roentgenologists make the unqualified statement that this condition can not be diagnosed from the roentgen ray studies alone. Our reply to this view is that the same might be said in regard to tuberculosis where the well known triad of findings—clinical, laboratory and roentgen ray—completes the diagnosis. But certainly roentgen ray findings often point their way and make the differential diagnosis possible by eliminating all other possible causes that might bring about the physical and clinical manifestations.

LABORATORY FINDINGS

Positive laboratory findings are in a sense essential for a definite diagnosis especially if we are to complete the three point diagnosis in reference to tuberculosis. It is a well known fact that moulds are frequently found in mouths of apparently healthy individuals and this necessarily suggests a thorough cleansing of the mouth before specimen for examination is obtained. The bloody sputum is usually copious and may be almost entirely blood. It is usually free of tissue fragments or caseous material. In the hands of experienced bacteriologists the yeast cells are readily recognized. Finding of these cells, however, does not clinch the diagnosis as does that of acid fast baccilli in tuberculosis but it is confirmatory at least. There are possibly one hundred and fifty varieties of yeast cells not all of which are pathological to man.

TREATMENT

Early recognition of this disease is essential to rational and effective treatment. If it is not recognized and goes along untreated it most probably will become a chronic affair resulting in multiple abscess formation often proving intractible or even fatal, although most cases will eventually recover. It is of very great importance that the differential diagnosis between tuberculosis and mycosis be established in order that rational therapy may be instituted. The iodides are specific in mycosis while this is not the recognized treatment for tuberculosis. Potassium iodide may be given in full doses and sodium iodide may be given intravenously to good advantage. If this line of treatment is instituted early the results are spectacular. Abscess formation with destruction of lung tissue is fortunately a rather slow process and ample time is allowed usually for close study and a correct diagnosis before treatment is begun. In children the syrup of ferrous iodide seems to be equally effective. In chronic cases small repeated doses of roentgen ray is of great help as is the case in practically all types of fungous infections. When abscess formation actually takes place it soon becomes a mixed infection proposition with all of its serious consequences.

CASE REPORTS

Case 1. A man 22 years of age, a woodsman getting out logs. When brought into hospital on a stretcher he was badly depleted from having been bleeding from the lungs for approximately one week. A check up plate was made on this patient at once with the results shown on this plate—Note the marked thickening over the greater part of the lower left lobe and about the hylus. Laboratory check up of sputum revealed the presence of numerous yeast cells. Intravenous administration of sodium iodide effected a rapid and uneventful recovery.

Case 2. A young man 27 years of age, a lineman weighing 185 pounds, walked into the hospital from the referring doctor's office near by. Had been bleeding from the chest for three days. Note the absence of tubercles in the apical regions and the infiltration about the right hylus and the lower right lobe. Intravenous sodium iodide cleared him up.

Case 3. A student away from home, 18 years of age, had been expectorating small amount of blood for ten days. Was brought home a few days before the holidays and placed in the hospital for observation and study. Note the cauliflower like infiltration in the hylus region on each side with extension into the right middle lobe. Laboratory tests of sputum showed yeast cells in abundance. Iodide medication quickly put him on his feet and he returned to his studies only about one week late.

Case 4. This child, 7 years of age, had been coughing for several days, blood was noted in the mouth and on the child's pillow where it slept. This was reported as a probable fungus infection. The pediatrician immediately put the child on syrup of iodide of iron. Prompt recovery followed.

DICUSSIONS

Dr. T. M. Oxford (Shreveport): I enjoyed the paper given by Dr. Moore.

It seems that mycotic infection must be endemic in Monroe. I remember a case who came from Monroe that was under my observation about four years ago on the orthopedic service in Shreveport Charity Hospital. This case came in with blastomycosis of the sternum. The pus did not show the blastomyces. The blastomyces invaded the lungs, the skull and right ankle. Diagnosis was proven by biospy.

At this time we instituted iodide therapy and ran this up to around 1200 grains a day. Also, the radiologist at the hospital gave x-ray treatments over the lungs, skull and ankle. We finally had to amputate the ankle due to the poor general condition of the patient.

Following several months' treatment as above outlined, and with occasional doses of neosalvarsan, this patient gradually improved. At the time we started treatment, practically one-fourth of the skull was gone. At the present time, the wounds on the skull and over the sterum are completely healed.

From time to time, it appears that one of the ribs will flare up.

I had several cases of skin blastomycosis which I treated with iodide alone, iodide by mouth, 1200 grains a day, and a diluted solution of potassium iodide that is about a ten per cent solution which is applied to the skin. All these lesions healed. Perhaps the x-ray and iodide together accounted for the successful treatment of this condition.

Dr. M. T. Van Studdiford (New Orleans): It is not clear to me what type of mycotic infection of the lungs is being discussed.

If is is blastomycosis, I do not agree with the discussion that the iodides are of any therapeutic value but instead it has been my experience that the administration or iodides are deleterious. I have never seen a generalized skin infection of blastomycosis improved by iodides, and have not seen any systemic infections of blastomycosis improved by iodides or cured by any method of treatment. However, literature contains proven infections which got well with and without

therapy.

Blastomycosis is a disease which gets worse and better in cycles. If you give iodides when the cycle is toward an outbreak, you make the condition rapidly more aggravated. If you start iodides when the condition is on the decline there appears to be some apparent therapeutic value to the drug. however this is only due to a systemic resistance which has developed and healing will progress faster without the iodides than it will with them. Therapy of skin infections of blastomycosis are best treated by cauterizing doses of x-ray or radium. I base the above conclusions for all types of blastsomycosis on some hundred patients treated at Charity Hospital.

Dr. D. M. Moore (Monroe): The object of this paper was to bring out the fact that early recognition of this conidtion and adequate treatment will prevent just such conditions as were described in Charity Hospital. When these cases are recognized early and are given the iodides, they have all gotten well in our cases. They have responded beautifully. Bleeding stops immediately.

As to the cycles, I believe if you get them in their first cycle, when they are early, you wipe them out. That has been our experience. Of course, in these chronic cases of blastomycosis, you have a proposition there to deal with.

Dr. Jack Dorish, of Atlanta, states specifically that iodides are specific in mycotic infections of the lungs. I think that experience has been borne out in our handling of the cases in our territory. As to whether they are endemc in Monroe, I do not know.

JAUNDICE*

FRANK HAGAMAN, M. D.
JACKSON, MISS.

Jaundice is an objective clinical symptom characterized by yellow staining of the skin, sclera and mucous membranes. It is not dependent on the presence of bile, but is caused by a pigment derived from red blood cells. This pigment is normally eliminated by the liver, and serves merely as coloring matter for the bile elaborated there. It regularly accompanies those disease conditions which, either by increasing the production, or interfering with the excretion of bile pigment, produces a supersaturation of pigment in the circulating blood, and is nature's effort to dispose of this excess by depositing it in the body tissues. To the clinician, its greatest importance is from the standpoint of diagnosis, since once the disease producing it is cured, the accompanying jaundice promptly disappears.

To understand properly the relation between jaundice and disease, it must be remembered that bile pigment is not a product of the liver parenchyma, but instead is derived from hemoglobin and is formed in the endothelial cells lining the reticulo-endothelial system. In the spleen, bone marrow, and to a less extent the Kupffer's cells dotted along the capillary walls of the portal circulation hemoglobin liberated by the normal disintegration of red blood cells is separated from its iron, and bilirubin (bile pigment) formed. In normal metabolism, this bilirubin is carried by the blood stream to the liver where it is filtered through the polygonal cells into the bile duct, and thence to the intestines. Here, due to the action of bacteria, it is changed into urobilinogen and in great part eliminated as such with the feces. A small portion, however, being absorbed from the intestine is carried by the portal vein back to the polygonal cells, and either again excreted by them or passed into the general circulation to be excreted by the kidneys.

So that this process might be expressed graphically, McNee has diagrammatically represented a lobule of the liver as consisting of closed tubes of polygonal cells terminating in the bile ducts and surrounded by capillaries from the portal veins and hepatic artery, which in turn, end in the hepatic or central vein. While passing through the capillaries, the bilirubin content of the blood is withdrawn and deposited in the bile capillaries where it first comes in contact with bile.

Increased concentration of bilirubin in the circulating blood (bilirubinaemia) may therefore be caused by:

1. Accelerated disintegration of red blood cells, with the formation of bilirubin faster than it can be excreted by the liver.

2. Disease of the polygonal cells preventing the normal elimination of bilirubin from the blood stream, thereby producing retention of bile pigment in the blood.

3. Obstruction of the bile ducts, which does not allow the free flow of bile and bile pigment

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*Read before the Louisiana State Medical Society, Lake Charles, April 27-29, 1936.

into the intestines, and by back pressure on the liver cells, causes reabsorption of the bilirubin into the general circulation.

Using the above as a basis for classification, McNee in 1913 suggested the division of jaundice into three groups:

I. Hemolytic.

II. Toxic or infective.

III. Obstructive.

Since that time, objections have at times been offered to this grouping, and it is possible that future research will necessitate revision.

I. HEMOLYTIC JAUNDICE

Congenital or familial hemolytic jaundice.

Acquired hemolytic jaundice.

Banti's disease.

Pernicious anemia.

Included in this group are those diseases whose accompanying jaundice is due to increased destruction of red blood cells and formation of bilirubin by the reticulo-endothelial system so rapidly that the normal level of bilirubin in the blood is raised sufficiently to result in staining of the tissues with bile pigment. Recent investigations suggest that jaundice in this disease is not solely due to increased disintegration of red blood cells but depends also on a partial suppression of the ability of the liver cells to excrete bile pigment. This is not caused by any failure of the liver function but is thought to be the result of anoxemia due to the associated anemia. All tests of liver function are normal. Outstanding examples of this type are: Congenital or familial hemolytic jaundice, acquired hemolytic jaundice, pernicious anemia and Banti's disease. As a group, they possess common characteristics which permit fairly easy differentiation from other diseases accompanied by jaundice. Since there is no obstruction to the flow of bile and bilirubin from the liver, the stools are of normal color (sometimes darker from the excessive bilirubin) and there is no bile in the blood or urine. The urine does contain large quantities of urobilinogen which reaches the general circulation by absorption from the intestines. The van den Bergh test gives a positive indirect reaction, whereas in toxic or obstructive jaundice the reaction is biphasic or direct. The difference in the type of reaction has been attributed to the fact that until bilirubin passes through the liver cells, it is of such complex composition that when the diazo-reagent of Ehrlich is added to it, a purplish color does not appear for five minutes. This is spoken of as an indirect reaction, and may be expected in hemolytic jaundice, since the bile pigment present in the blood serum has not been acted on by the polygonal cells. Should the change occur immediately, the reaction is spoken of as a direct reaction, and indicates that the bilirubin has passed through the liver cells, thereby altering its composition so as to produce an immediate reaction when placed in contact with the van den Bergh reagent. The van den Bergh test is used also as a quantitative test for bilirubinaemia. The normal concentration of bilirubin in the blood is expressed as from 0.2 to 0.4 units, whereas 4 units is sufficient to produce jaundice. Repeated tests are of value therefore in determining the progress of the disease condition.

The icterus index is thought by some to be a more accurate quantitative gauge of bilirubinaemia than the van de Bergh reaction, and is employed by us as a routine laboratory procedure in all hospital admissions. It is of no aid, however, in the differentiation between hemolytic and hepatic jaundice, but can serve a useful purpose in the detection of bilirubinaemia when the other clinical symptoms are not pronounced enough to call it to the clinician's attention. Normally, the icterus index is 5 and from 5 to 15 the zone of latent jaundice, i. e. bilirubinaemia without visible skin discoloration. When the reading exceeds 15 the jaundice can easily be detected.

The susceptibility of red blood cells to hemolysis by hypertonic salt solution is known as the fragility test, and when increased is pathognomonic of congenital of acquired hemolytic jaundice. In the normal blood, hemolysis begins in 0.42 per cent salt solution and is complete in 0.30 per cent, whereas in hemolytic jaundice, hemolysis begins in 0.60 to 0.70 per cent, and is complete in 0.35 to 0.40 per cent. The following case reports are illustrative of further clinical data suggestive of hemolytic jaundice. During the course of the disease, individuals suffering from congenital or acquired hemolytic jaundice may have periods of marked exaggeration of all symptoms spoken of as

"crises." In case 1, the patient gave a history of having had two such attacks which lasted for about one week, and during which she was only semiconscious, the home physician stating that her pulse was so rapid that he was unable to count it accurately. Her temperature rose as high as 102°.

CASE REPORT

Congenital Hemolytic Jaundice: Miss A. B., aged 17, single, was first seen June 4, 1935, complaining with recurring attacks of jaundice since early childhood. On one previous occasion she had had an attack of fever and extreme prostration lasting for about one week. The family history was negative, with the exception that her father had recurring attacks of jaundice during his lifetime, and she has two aunts who also suffer at times with mild jaundice. She thinks the cause of her father's death was cancer. The past history is otherwise negative.

About six weeks ago patient first suffered with some nausea and vomiting and general lassitude. Several days after these symptoms started she fainted and for one week thereafter was only semi-conscious. Her home physician states that her pulse was so fast during this time that he could not accurately count it, and her fever ranged between 95° F. and 102° F. Since that time, she has had no more fever, but feels very tired and weak all the time. With the beginning of this illness six weeks ago, she noticed that her skin was yellow, which color has become intensified until now it is extremely pronounced. There has been no itching of the skin, and with the exception of the previous "crisis" her general health has been very good. The previous attacks of jaundice did not greatly incapacitate her. She has had no pain at any time. During the past six weeks she has had no appetite at all and has had to force all food that she has taken.

On examination her pulse was found to be 110, temperature 99.6°, blood pressure 100/70. Skin, sclera and mucous membranes were deeply jaundiced. There was some evidence of chronic inflammation of the tonsils, the teeth were good. The heart and lungs were normal. Abdominal examination revealed no detectable enlargement of the liver, and no tenderness in the region of the gallbladder. There was no distention of the abdomen and no rigidity of the muscles. The spleen was greatly enlarged, extending downward to a level with the umbilicus, but was not tender. The feces was normal in color and showed urobilin. Urinalysis showed a negative reaction for bile and bilirubin, with strongly positive urobilin test. The Wassermann test was negative and the van den Bergh reaction was indirect, showing 8 mgm. of bilirubin. The icterus index was 85. Erythrocytes 2,670,000 per cu. m.m.; hemoglobin 47 per cent (7.99 gm.). Reticulocytes averaged 1.5 per cent, and venous coagulation time was four minutes. The fragility test showd a hemolysis beginning at 0.51 per cent and complete at 0.40 per cent. A diagnosis of congenital hemolytic jaundice was made, and 750 c.c. of 5 per cent glucose solution given by slow intravenous drip. On the day following admission, 500 c.c. of citrated blood was given, and this procedure was repeated two days later. On June 8 splenectomy was performed. There were no adhesions of the spleen to the surrounding structures, and the operation was accomplished with the minimum technical difficulty. Exploration of the gallbladder showed that it contained a number of small stones, but the removal of them was deferred until a later time. Her postoperative convalescence was uneventful, and on June 16, twelve days following operation, she was allowed to go home in an ambulance. On this date blood examination showed that the total number of red cells had increased to 3,760,000; the hemoglobin was 63 per cent, icterus index 15, and the van den Bergh 1.5 mgm. bilirubin, indirect reaction. The fragility test remained practically unchanged. August 12, 1935, two months later, the patient returned for gallbladder surgery. Her blood picture was essentially negative, with the exception of the increased fragility of the red cells, and operation was performed the following day. The gallbladder was found to be thickened and white and filled with many small stones. It was noted that there were two cystic ducts which emptied separately into the common bile duct. The appendix was removed prophylactically. Her convalesence following this operation was uneventful and when she reported for observation one month ago she stated that she was in perfect health and had had no symptoms since operation.

CASE REPORT

Acquired Hemolytic Jaundice: Dr. B., aged 60, was seen first May 2, 1931, complaining with fever, jaundice and malaise. His family history was entirely negative and with the exception of an attack of mild jaundice three years ago, his general health had been good and he had been actively engaged in the general practice of medicine. At that time he noted distention of the abdomen with discomfort, but no definite pain. He had no further trouble until April 25, 1931, when he developed temperature 101°, marked abdominal distention and discomfort. These symptoms continued and on April 30 there was slight jaundice, hardly noticeable except in the sclera. There was no nausea or vomiting at any time, and he suffered no pain. He had been conscious of no splenic enlargement at any time. On physical examination, his height was 70.5 inches; weight 150 pounds; pulse 100; blood pressure 140/70. Jaundice was perceptible in the sclera, but was not found in the skin and

mucous membranes. The rest of the examination was essentially negative with the exception of the abdomen, where there was quite marked distention with slight tenderness on deep pressure just to the left and below the umbilicus. The liver, spleen and kidneys could not be palpated. No masses were felt in the abdomen and there was no rigidity. Examination of the blood showed a negative Wassermann, 41 per cent hemoglobin (Newcomber), and 1,920,000 erythrocytes per cu. m.m. The icterus index was 15, and the van den Bergh gave an indirect reaction with a value of 6.75 mgm. of bilirubin for 100 c.c. of blood. Examination of the urine was negative for bile but no urobilin test was made. Gastrointestinal roentgen study with administration of gallbladder dye showed no pathology except non-visualization of the gall bladder. During the next three weeks he was given six blood transfusions, together with parenteral administration of glucose solution and his general condition gradually improved, until the distention was practically gone and the red cells per cu. m.m. numbered 3,470,000 with 43 per cent hemoglobin. At operation on May 27, the spleen was found to be about twice normal size, and not attached to any of the surrounding organs. It was removed without technical difficulty, and his condition being good, cholecystectomy was performed for a chronically diseased, thickened gallbladder. Abdominal exploration showed no evidence of other disease. His convalescence following operation was uneventful, and since that time his health has been good. The fragility test, which showed hemolysis beginning at 0.48 per cent and complete at 0.40 per cent before operation, was practically unchanged when he reported for observation several months later. No further blood study has been done, but his color is good and he has had no recurrence of jaundice. He has had no abdominal distention and he has been in active practice since the convalescent period.

The persistence of the increased fragility of the red blood cells would suggest that the cause of the hemolytic jaundice resides in the erythrocytes themselves, and the removal of the spleen therefore does not remove the cause, but simply reduces the total amount of reticulo-endothelial system, and in this way lessens the destruction of red cells. For this reason, it is to be remembered that, although recurrences are extremely rare, they may occur after splenectomy, should the remaining reticulo-endothelial system hypertrophy sufficiently to cause again increased formation of bilirubin.

II. TOXIC OR INFECTIVE JAUNDICE

Acute catarrhal jaundice.
Toxemia of pregnancy.
Arsenic poisoning
Acute yellow atrophy of the liver
Luetic hepatitis.

Whenever the parenchymal cells of the liver are so damaged by infection or poison as to impair their ability to extract bilirubin from the blood serum, an accumulation of bilirubinaemia occurs, and if of sufficient degree, jaundice ensues. The treatment of this type of jaundice is practically always non-surgical, in contradistinction to obstructive jaundice, which it often resembles, and from which it at times can be differentiated only by extensive investigation and prolonged observation. In addition to the impaired function, there is sufficient edema of the liver cells to produce some degree of congestion in the bile capillaries, with resulting back pressure on the liver cells and reabsorption of bilirubin and bile into the blood serum. The circulation blood, therefore, contains both types of bilirubin, and as a result the van den Bergh test shows an intermediate or biphasic reaction. If the congestion and reabsorption increases with the progress of the disease without a corresponding increase in damage to the liver cells, bilirubin of the type which has passed through the liver cells will predominate and an immediate or direct reaction will occur, thereby increasing the difficulty of differential diagnosis, since a direct reaction is obtained in the obstructive type of jaundice as well. It is important, therefore, to secure repeated readings since a case of catarrhal jaundice may be first seen at its height when the van den Bergh reaction will be direct.

The galactose tolerance test is an indication of the degree of damage in the liver cells as expressed by their inability to metabolize this sugar. Galactose is used since it has no renal threshold such as exists for dextrose and glucose, and all sugar not metabolized by the liver is excreted in the urine within a period of five hours. Shay and Schloss are convinced that a normal liver is capable of utilizing galactose in amounts ranging from 37 to 40 grams. When taken by mouth, it is absorbed by the intestines into the portal vein and carried directly to the liver. If not utilized by the liver, it is returned to the general circulation and excreted by the kidneys. The Benedict quantitative method may be used in determining the amount of galactose

present in the entire urine secreted during the five hours following ingestion of the sugar, and the amount excreted with the urine is used as an index of liver damage. If, for instance, 3 grams of galactose are excreted within the five-hour period, the reading will be three, which is the upper limit of normal. Occasionally a high reading will be found in obstructive jaundice, due to the fact that some individuals do not utilize but 37 grams of galactose. These high readings may cause confusion at times, since early in the course of toxic jaundice, damage to the liver cells may have progressed to a point sufficient to prevent the utilization of galactose, and a reading below normal obtained. If the test is repeated at several day intervals, however, until the disease has reached the climax, the readings will be found to exceed three. Shay has never obtained readings above three grams in cases of obstructive jaundice. The feces is normal in color, gradually becoming lighter, depending on the amount of intra-hepatic congestion and the urine contains urobilin and bile.

Pain is usually absent in the toxic type of jaundice, but since it may be absent also in obstructive jaundice from closure of the common duct by stones or extra hepatic growths, this symptom is of relative value only. The following case report is illustrative of the symptoms and clinical course of acute catarrhal jaundice.

CASE REPORT

Acute Catarrhal Jaundice: Mr. W., aged 26, reported April 17, 1934, stating that he was losing strength and weight and had general malaise. The family history was entirely negative, and with the exception of a very severe attack of influenza in 1917, his general health had always been good. About three months ago he began to feel badly and tired, and since that time has continued to have general malaise, lack of appetite, and constipation. About three weeks ago he noticed a muddy discoloration of the skin and during the week preceding April 17, he thought that he could detect a yellow tinge to the eyes. His stools had been of normal color. On physical examination, the temperature was 99; pulse 116; blood pressure 120/75; complexion sallow, with moderate jaundice of the sclera. The tonsils showed chronic inflammation, but the head and neck were otherwise negative. Examination of the heart and lungs were negative also, and there was no distention, or tumors, in the abdomen. The liver was not enlarged, the spleen was not palpable, and there was no tenderness in the region of the gallbladder. The urine was dark in color and contained bile and bilirubin. Blood showed a negative Wassermann test, with direct van den Bergh reaction, and a value of 5 mgm. bilirubin per 100 c.c. The icterus index was 15. The fragility test was negative. Gastrointestinal roentgen ray study showed no evidence of disease, and a normally functioning gallbladder. No gall stones were visible. Gastric analysis showed free hydrochloric acid 30, total acidity 45. Negative for blood. Stool showed no ova or intestinal parasites. The blood showed no anemia and the galactose tolerance test gave a reading of three and one-half.

The direct van den Bergh reaction was attributed to the fact that the disease had been first seen at its height, and consequently several days later, another test was done which showed a biphasic reaction. Treatment, therefore was instituted for catarrhal jaundice. Proceeding on the basis that it is best not to attempt stimulation of diseased parenchyma, he was fed a diet high in carbohydrates and no attempt was made to stimulate the liver cells. Occasional doses of magnesium sulphate were administered to keep the intestinal tract clear and on April 30, 1934 he came for tonsillectomy. The jaundice had disappeared, his appetite and digestion were perfect, and the urine was normal in color. July 17, 1934 he reported stating that he was feeling better than he had in several years, and felt that he was well. The icterus index at that time was 5.

III. OBSTRUCTIVE JAUNDICE

Common duct stone or new growth.
Stricture of the common duct.
Chronic pancreatitis.
Carcinoma of the pancreas.

Here jaundice is due to reabsorption of bilirubin from the liver and bile as well as bilirubin which is present in the circulating blood in large quantities. Due to the fact that a majority of the bilirubin is of a type that has passed through the liver cells, an immediate direct van den Bergh reaction is obtained. The urine contains bile, but since no bilirubin reaches the intestines to be changed into urobilinogen and reabsorbed into the blood, there is no urobilin in the urinary output. Obstruction of the bile duct from pressure exerted by enlarged glands or malignant growths less often cause pain with fever, and is not often characterized by periods of remission and exacerbation as is the case of obstruction due to stones. Colicky pain is common, and when present is presumptive evidence of a stone in

the common duct, as is repeated rigors with steeple-chase type of fever. Due to the presence of bile in the blood and tissues, the patient frequently complains of itching and bradycardia. The following case report is illustrative of this group.

CASE REPORT

Stricture of the Common Duct: Mr. H., aged 37, reported October 13, 1932, complaining of extreme jaundice, weakness and pain in the region of the gallbladder. The family history was negative and he stated that until two years ago his general health was excellent. He had had no serious illness, and no operations. Two years ago he began having pain below the shoulder blades and has continued to have some discomfort in this region ever since. Six weeks ago he became nauseated, vomited and felt extremely badly. He did not know whether or not he had fever. Two days later he began to "turn yellow" and was unable to eat. The discoloration of the skin, sclera and mucous membranes continued until he was almost bronze colored, and he stated that his stools had been white. There had been no severe pain, however, at any time and he had had no rigors. Examination showed a badly jaundiced individual, weight 147 pounds, height 68 inches, temperature 98°, pulse 62, blood pressure 125/80. With the exception of marked jaundice, examination of the head, neck and chest was negative. Examination of the abdomen revealed an enlarged liver, extending half-way up to the umbilicus. The spleen was not enlarged, and there was no marked tenderness. The clinical examination was otherwise negative. A roentgenologic report of the chest revealed no disease, and a plate of the kidney and bladder areas was negative for calculi. The gallbladder region showed no evidence of stones, but it was thought that a faint shadow corresponding with the outline of the gallbladder could be demonstrated. Gastrointestinal roentgen ray study was essentially negative, and gastric analysis was normal. The blood showed 3,720,000 erythrocytes per cu. m.m., with 56 per cent hemoglobin, a negative Wassermann and Kline test. Blood sugar was 100 mgm.; urea nitrogen 16 mgm., creatinine 1.5 mgm. The van den Bergh showed a direct reaction with 5 mgm. of bilirubin. The icterus index was 70. The stool showed no urobilin, and the urine was strongly positive for bile. No urobilin test was done on the urine. A diagnosis of obstructive jaundice, probably due to extrinsic pressure was made. On January 2, 1933, he was admitted to the hospital, and the usual preoperative preparation for jaundice cases instituted. This consisted in his case of intravenous administration of glucose solution, blood transfusions, and the administration of calcium chloride by vein. On January 4 an exploration of the abdomen revealed the gallbladder greatly distended and complete obstruction of the common duct, due to a simple stricture. There was very little evidence of disease in the gallbladder walls, and with the exception of slight enlargement of the pancreas, the rest of the abdominal cavity was negative. Cholecystogastrostomy was performed, and his postoperative convalescence was uneventful. There was no evidence of infection in the operative wound, and he was allowed to return home January 14, by ambulance. Three days later, while lying in bed, he sneezed and complete disruption of the wound occurred. Immediate closure was accomplished by through and through silkworm gut stitches, and a blood transfusion given. There resulted no infection, and his convalescence was uncomplicated. He remained in bed for one month, and no hernia resulted. August 23, 1933 he reported that he had a good appetite, his bowels were regular, and it was noted that there was no evidence of jaundice. The urine was normal in color. The liver extended one finger's breadth below the costal margin, and he reported that his stools were normal in color.

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DISCUSSION

Dr. Foster M. Johns (New Orleans): The differential diagnosis rests very frequently on laboratory work, and a great deal depends on the continued examination of various laboratory materials over considerable periods of time. Frequently, the examination of the blood will reveal evidence of hemolytic jaundice not shown in the ordinary tests or the icterus index or van den Bergh test. Hemolytic jaundice will depend on the presence of anemia.

The balance of the blood rests between the active production of blood and the destruction of blood by the spleen. Under normal conditions red cells are produced approximately of equal size and shape. In hemolytic jaundice the spleen which ordinarily takes charge of the destruction of red blood cells is more thickened than under normal conditions, and there is rather active destruction of blood. Surgical removal of the spleen will allow the cells to circulate a few days longer and

produce some alleviation or palliation of the symptoms.

After the surgical removal of the spleen the individual cells last a few days longer than before and the total number of cells is increased to a considerable extent. The average case after splenectomy will have sufficient blood to carry on active function. The crisis is averted and the usual run of the case is to have periods of recrudescence, during which time the patient is apparently normal. Subsequently the patient may have a relapse of the condition to some extent.

Dr. L. A. Hebert (Lake Charles): There is very little that may be added to the already voluminous discussion in this matter. However, I wish to call your attention to the occasional variations one may find in close study of blood cells in these individuals. The studies may vary from time to time. There is one test, however, on which we may rely to give us valuable information in the diagnosis of hemolytic jaundice, and that is the fragility test. That probably is the most reliable we have.

Dr. W. R. Mathews (Shreveport): There are many similarities in the spleens of familial hemolytic jaundice and sickle cell anemia, and so far as I know the course of the two is very different.

Recently, I have had a case of anemia in a colored child 7 years of age who had a spleen that was palpable, quite a marked anemia, 1,500,000 red cells, and was diagnosed on the increased fragility of the red cells to hypotonic salt solution. The spleen was removed and we kept the child in the hospital under observation until the red cell count was up to 4,500,000—the exact time I cannot state. I had a great deal of trouble convincing myself that slides from this spleen were not identical with slides from sickle cell anemia. As a matter of fact, if the slides were mixed up, with no numbers, I could not differentiate them. I want to know if anyone observed familial jaundice atrophy of the spleen.

Dr. Robert Kapsinow (Lafayette): The following is a preliminary report of a study on the subject of congenital familial jaundice, the patient giving all the clinical findings of the disease as well as a family history for four generations. This patient refused splenectomy and submitted instead to this study. He has been followed for four months. Red blood counts icteric index and fragility tests were made every three days, and gave data from which these remarks follow.

There appears to be a periodic rise and fall of the red cells which roughly occurs every two weeks. As the red cell count falls, there is an increase in the icteric index and a gradual increase in the resistance of the red cells to hypotonic saline. After the low point has been reached, which in this case was about 2,000,000 red blood cells, a rise occurs in the erythrocyte count with a corresponding fall in the icteric index and a slow but definite decrease in the resistance to hypotonic saline.

There is no apparent dietary relationship to this ebb and fall but there is sufficient reason to believe that it is affected by the ingestion of large quantities of water or salt. As yet no sodium chloride or blood solid determinations have been made.

The van den Bergh test is not as specific as it was originally thought. Many years ago, I found that I could get all the various reactions with sodium bilirubinate if I varied the concentration used. The icteric index described by DeWitt Stetten will give just as definite information as was claimed for the van den Bergh reaction.

INDUCED OR ARTIFICIAL FEVER*

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Mott, in a lecture on "Mind and Body," stated that the reason why fatal syphilis of the nervous system is more common among civilized people was due to the fact that treatment by mercury causes the organism to seek the central nervous system, where it was protected from the effects of the drug.

In opposition to this belief, Hutchinson stated that he rarely saw any sequela in patients suffering with syphilis who had had a two years' course of mercury.

It was reported by me in a paper read before the American Medical Association in Detroit September, 1930, that clinical observation had suggested that too vigorous a chemical therapy in cases of dementia paralytica appeared harmful in some patients. My conclusion was and still is that too energetically used, chemicals are definitely contraindicated in the treatment of late nervous syphilis.

Today the enthusiasm for foreign protein therapy has developed to the point where not only is it used in the treatment of dementia paralytica, but also extensively employed in the treatment of tabes dorsalis, and other pathological states.

In 1917 Wagner von Jauregg of Vienna first inoculated paretics with malaria. Ten

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years later he was awarded the Nobel prize in medicine in recognition of his contribution to the treatment of this disease.

The subject of resistance, artificially produced through protein reactions, is one which will more and more come to the front. The streptococcus of erysipelas appears to have a retarding and occasionally a curative influence on the growth of some sarcomata. A case has been recorded in which an attack of acute erysipelas completely removed a long standing dropsical effusion due to chronic nephritis.

Antagonisms are rarer than partnerships, and perhaps the best known is that of the malarial parasite to the spirochete of syphilis. The immunity of the syphilitic negroes of the Congo from cerebral syphilis has been remarked by French observers.

Today it seems that a greater number of younger patients are presenting the serological and clinical findings of paresis. Formally, and especially before the advent of intravenous arsenical therapy, the paretic was usually a person in his late forties or fifties. It is a very interesting conjecture as to whether this is due to a more virulent syphilitic organism or to the more complex problem of adjusting socially and economically, thereby creating a lower general resistance to the disease. Might it not be the result of too energetic and unintelligent employment of intravenous therapy with chemicals? When one visualizes the pathology of cerebral syphilis, it does seem reasonable to feel that arsenic, mercury and iodides are capable of a great deal of destruction in the central nervous system to these highly diseased tissues.

In an analysis of the case records of twenty-eight patients in the De Paul Sanitarium inoculated by me with malaria in the treatment of dementia paralytica, it was noted that the patients who did badly and in whom the therapeutic results were poor were those who had been too energetically treated chemically before the introduction of the malarial plasmodia.

O. L. Nelson employed diathermy for the elevation of temperature in the treatment of eleven neurosyphilitics of the tabetic type. It appeared that in five of the eleven patients so treated that there was a dimunition in the tabetic pains. It required one and a quarter hours for the temperature of the patient to be raised 104 degrees F. This temperature was maintained from one to two hours, depending upon the reaction of the patient to the temperature. Two to three treatments were given each week, and before the second treatment the author gave 10 c. c. of a soluble iodine intravenously, and for the third treatment the patient received bismuth. Eight to ten such fever treatments constituted a series.

It is stated by Dr. Nelson that there are few contraindications for the employment of diathermy in paresis. Only a severe myocardial degeneration was felt to be a definite reason for not using this therapy. He concluded that malaria therapy was superior to diathermy in the treatment of dementia paralytica.

The tabetic patient responded poorly to malaria therapy and that it was a painful procedure and should not be employed.

The benefits derived from the use of diathermy in a tabetic patient is due to a local, active, deep seated hyperemia, producing tissue drainage, and influx of arterial blood and an increase in the leukocytes of which the phagocytes play some part.

It was found that in these cases so treated with diathermy that the serology did not parallel the subjective improvement. Regular antiluetic treatment was given along with the diathermy.

Solomon and Epstein concluded that in 173 patients suffering with dementia paralytica who were inoculated with malaria between February 1925 and February 1931 and who received other treatment as well found that improvement from the clinical standpoint was obtained in 36.4 per cent and a definite improvement was obtained in an additional 27.1 per cent.

Serological results in 169 of these patients who were subsequently studied from the standpoint of their spinal fluid findings showed a normal spinal fluid in 36.7 per

cent; a greatly improved spinal fluid in 20.7 per cent and a somewhat improved fluid in 18.3 per cent. They state that the best method of treating patients with dementia paralytica cannot be determined at the present time. They employed treatment consisting of injection of drugs; tryparsamide, arsphenamine, bismuth, mercury and iodides. They also used in their patients suffering with paresis fever induced by the virus of rat-bite fever, injection of typhoid vaccine, milk and diathermy. It is their impression that a combination of methods with malarial therapy give the more satisfactory results than treatments with malaria alone.

There are unquestionably contraindications to sustain high temperatures in the treatment of cerebral syphilis: old age, myocardial or renal insufficiency, demented phase of dementia paralytica, active tuberculosis and arterial hypertension.

Hot air, hot cabinets, hot water, hot plates, hot blankets, hot baths, be it conducted heat, convective heat or conversive heat, be it diathermy, radiothermy, hyperthermy or pyretothermy. The question is: Will all or each of these methods produce clinical results? From the literature it does appear that each of these methods if adequately induced, properly controlled, hyperpyrexia treatments will lead to a certain measure of therapeutic success in selected cases of paresis.

CONCLUSIONS

Induced or artificial fever is of definite value in the treatment of dementia paralytica. It does appear that the best clinical results are obtained in the employment of malaria. Apparently the foreign protein element plays a large part in the benefits derived from this type of therapy. Those cases treated only with elevated temperatures do not appear to respond as well clinically. The physiological changes during the hyperplexia cannot account for the treponemicidal action of the fever.

All of the spirochetes of syphilis are not destroyed by elevated temperatures, since those in the deep tissues, especially the lymph glands become heat and chemo-resistant.

It is therefore desirable that pyretotherapy be combined with the arsenicals and heavy metals. As stated, there are definite contraindications for the use of temperature elevation therapeutically used. Artificial or induced fever is not a panacea in the treatment of syphilis of the central nervous system.

DISCUSSION

Dr. W. S. Kerlin (Shreveport): In discussing the title of this paper, I believe I can better approach the subject by reporting, as briefly as possible, a case I saw in consultation several years past:

A case of paresis that would not respond to the usual plan of treatment after having been hospitalized for a considerable length of time on account of severe mental symptoms. Shortly thereafter he was again admitted to the hospital with mental deterioration and a severe bloody dysentery. During this period, consisting of five months duration, his life, on numerous occasions, was despaired of, due to the uncontrollable dysentery. For a considerable length of time his temperature fluctuated between 100 and 105 degrees. The dysentery finally subsided and he slowly improved, both physically and mentally. Previous to this illness his spinal fluid Wassermann had remained four plus in spite of intensive antileutic treatment. At the time of discharge he was normal mentally and his spinal fluid showed a one plus reaction. He has remained clinically cured for the past seven years and his treatment has consisted of periodic courses of tryparsamide. Recently the spinal fluid still showed a one plus reaction.

Dr. C. S. Holbrook (New Orleans): Dr. Unsworth was good enough to ask me to discuss his paper, and I wanted to do so anyway. I am decidedly of the opinion that inadequate treatment of the early stages of syphilis is responsible for involvement of the central nervous system later; and, as has been observed, people who develop syphilis of the central nervous system usually have mild primary and secondary lesions. It is felt that the organisms which have a predilection for the nervous system are prone to attack the mucous membranes lightly and often respond readily to treatment; thus, shortly after treatment is commenced the patient feels well and therapeutic measures are not continued. I think that all syphilitics some time in the course of treatment should have a spinal fluid examination. Today, with the laboratory facilities that are available, a patient is improperly treated unless a spinal fluid examination is made; but should the patient decline to permit a spinal puncture, our clinical notes should contain the fact.

The prognosis for patients with paresis has greatly improved. Fifteen or twenty years ago when paretics came to an institution—and, by the

way, they constituted fifteen to twenty per cent of all new patients in mental hospitals—we felt that a patient would not be there very long. They all died within three years, and those treated with salvarsan or mercury died a little sooner, so the men doing this work became very pessimistic about treatment of paretics. It was just such observations as Dr. Kerlin mentioned that led to fever treatment. Paretics are apt to develop other illnesses, and as it was observed they did better after this intercurrent disease, this led to the search for a better method of producing fever.

The end of the story has not been told. Personally, I am very firm in the opinion that malarial hyperpyrexia is better than any other type fever treatment we have. I am inclined to think that tryparsamide should be used extensively in paretics. Lorenz of Madison, Wisconsin, reports just as satisfactory results with tryparasamide as is brought about with hyperpyrexia, but it is my opinion that the two methods, hyperpyrexia and tryparsamide, should be employed conjointly. Salvarsan, neosalvarsan, and the heavy metals are useless—certainly they were useless before we had the newer methods, and by themselves are useless now. I think treatment should be hyperpyrexia and tryparsamide. The indication for artificial fever is clear cut and proper only for paretics and not for cerebrospinal syphilis where the grey matter is not involved by spirochetes.

At present, with proper treatment about thirty-three per cent of the paretics can be restored to their former efficiency—we do not speak of them as being cured—and can go back to the same job with the same economic efficiency. Another thirty-three per cent can be improved, being able to live outside an institution, and some of these will be able to work. The remaining thirty-three per cent grow worse or die. This is in marked contrast to the prognosis a few years ago when all these patients died within a comparatively short time. Now about sixty-six per cent are markedly improved or are clinically restored. We must consider these patients as deserving our best efforts.

Dr. Roland Young (Covington): I want to compliment the essayist on his paper. I know that he has given thought to this subject for some length of time and he follows the present trends of thought on this subject which are up to date.

The difference of question between him and Doctor Holbrook are fairly well understood by me. However, I feel pretty much as Doctor Holbrook does in regard to tryparsamide and fever therapy. I noticed the paper was on induced fever therapy. I noticed the paper was on induced fever in reference to disease, in particular to paresis. I feel in that connection our general practitioner might be interested a little bit along the lines that we specialists are. What we are doing is in a sense harnessing nature. Chorea and rheumatic disease respond to triple typhoid induction especially the former.

I want to say a few words in regard to the main types of inducing fever, malaria, triple typhoid, diathermy—by the inductotherm or oscillotherm—and Kettering hypertherm now used today. Of the machinal means for simplicity the inductotherm is very good. The Pennsylvania Institute for mental diseases showed while I was there in '34 malaria fever proved best in paresis. In my opinion, a rather effective way of administering hyperpyrexia even in paresis is by the triple typhoid vaccine injection intravenously. I use two injections three to four hours apart in order to get high and sustained temperature and sometimes will precede the intravenous doses by a period of about twelve hours by a subcutaneous injection. As a last word, it is a question with some of our men in this line and I quote now as I heard Doctor Israel Strauss at Mount Sinai in New York City state this past Fall that some of us regard triple typhoid injections properly given as perhaps just as good as our malarial therapy.

Dr. H. R. Unsworth (In Conclusion): I wish to thank the doctors for their discussion.

With reference to typhoid intravenously, I have had no experience.

PHYSICAL THERAPY IN THE CHRONIC RHEUMATIC DISEASES*

JOHN S. COULTER, M. D.†
CHICAGO

Chronic rheumatism or chronic arthritis is not a disease of certain joints, but rather a systemic illness in which there may be disturbances of the circulation, general metabolism and the gastrointestinal system. It includes the syndromes of nerve, muscle and joint affections called neuritis, myositis fascitis or arthritis according to the parts affected. The object of this paper is to illustrate certain important principles of the use of physical agents as adjuncts in the treatment of this disease, which causes so much suffering and economic loss to the persons affected.

The importance of the use of physical agents is shown in an analysis of fifty hospitalized cases in the Mayo Clinic. Although the average

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†From the Department of Physical Therapy, Northwestern University Medical School, Chicago.

duration of illness was 5.7 years on admission, only sixteen of the fifty patients had been advised by their regular physicians to use massage; only eight had been given exercises; and only four had been given supervised applications of heat for a period longer than two months. Half of the group, however, had gone to spas or other resorts where physical therapy was used. Physical agents should only be used as adjuncts to other forms of treatment. Under direct observation by the capillary microscope, the capillaries of patients suffering from chronic arthritis show a markedly diminished peripheral blood flow. The main therapeutic value of the physical agents used in treatment of this disease is their ability to increase blood flow.

Physical agents should be prescribed definitely by the physician. They should be used by the physician in his office or in the hospital, but since the purpose is to increase circulation, it seems definitely indicated that some of these agents should be applied at frequent intervals during the day. In our clinic the patient, the nurse or some member of the family is instructed in the use of physical therapy in the hospital room or the home. If, in the case of ambulatory patients, the physician will supplement office treatment with home treatment, he can secure for these patients practically the same result as would be achieved by hospitalization, resulting in a considerable reduction in the cost of medical care for the patient.

HEAT

Heat, applied both systemically and locally, has its most extensive and varied application in the treatment of chronic arthritis. Heat is applied locally over an arthritic joint to increase the local circulation. It has been shown that the quantity and quality of this heat must be prescribed by the physician.

The metabolism of the tissue cells is affected by the temperature of the tissues. The normal exchange between the blood and the tissues in the capillaries is such that the arterial end of the capillary contains 95 per cent oxygen and the venous end 70 per cent. This saturation of oxygen depends on the rate of exchange between the tissue cells and the blood flowing through the capillaries. When heat is applied so that the temperature is moderately increased to 102° F. the rate of blood flow through the capillaries is increased, tissue metabolism is accelerated and the rate of exchange between the blood and the tissues is increased so that the blood entering the vein contains only 60 per cent of oxygen. Above 102° F. the rate of blood flow is so rapid that the metabolism of the tissue cells is decreased so that the blood entering the vein simulates arterial blood and contains 91 per cent of its saturated value of oxygen.

These facts are clinically important. In a case of chronic arthritis of the ankle with a circulatory disturbance of the same leg which caused an interference with normal tissue metabolism, the patient was directed to put his leg in an extremely hot bath for twenty minutes. This caused a great increase in his pain that lasted for hours after each bath. With heat applied by an electric lamp baker so that the temperature at the ankle was 98° F. the pain decreased. The kind of heat prescribed must be determined from a consideration of the penetration desired. In the local use of radiant energy it has been shown that the radiation from an incandescent lamp, using maximum skin tolerance as a gage of intensity, caused the subdermal temperature at a depth of 0.5 cm., to rise to 47.7° C., while with far infra-red radiation from an infra-red generator at the same depth the temperature attained was 41.7° C.

Another commonly used method for applying local heat is by medical diathermy. It is believed that short wave medical diathermy is the most convenient method for its application. At Northwestern University Medical School, the temperature of the skin, of the subcutaneous tissue, and of the quadriceps extensor muscle in thirty-five human subjects was measured by a thermocouple in conjunction with a potentiometer before and after twenty minute clinical applications of short wave medical diathermy. In these tests it was found that the electromagnetic field, or electromagnetic induction, was the most effective in its ability to heat the deep tissues of the human thigh.

If medical diathermy is used in chronic arthritis, it should be used for a short period and

of low intensity for the first few doses, for at times medical diathermy in arthritis causes an aggravation of the local symptoms. This usually happens in cases with active foci of infection. It has been observed to be of benefit from a clinical viewpoint so often that we always give it a trial. We use short wave medical diathermy in the form of electromagnetic induction daily or every other day for twenty minute periods at an intensity determined by the patient's tolerance. The first doses are always half time and half intensity and some form of heat is applied at home two to four times a day. In addition to the local heat, the application of heat systemically is of value for the increased circulation and metabolism induced. These effects are increased if following the general "bake" a Scotch douche is given.

HYDROTHERAPY

In the use of water in the treatment of arthritis the Scotch douche or cold shower after a bake furnishes a "metabolic and circulatory whip" if properly used. Where the proper apparatus is not available, a sheet bath is a valuable substitute. For home use again the patient should be given definite instructions for its use. For the generalized application of heat the hot bath may also be used at home.

For local applications of heat by water, a whirlpool bath is often valuable. The whirling of the water under pressure and the air intake enables the water temperature to be increased to 115° or 120° F. The rapidily moving water and air bubbles also give an efficient form of gentle massage. Joint motion that could not otherwise be tolerated may be given while in the bath. Contrast baths using hot water followed by cold are not used, as it has been noted by direct observation of the capillaries through the microscope that the capillary circulation is not increased by contrast baths as efficiently as with hot baths.

HYPERPYREXIA

In our clinic in the treatment of selected cases of atrophic arthritis we use hyperpyrexia by physical agents. We have proved by observation of the peripheral circulation with the capillary microscope that the maximum circulatory increase is with a temperature of 104° F. Therefore we give a temperature of 104° F. for four hours. We have also found by observation of many cases that if we use short wave diathermy by electromagnetic induction to raise body temperature that the pulse rate is lower than by other physical methods.

MASSAGE

The effect of massage in arthritis is to open vascular channels and increase the circulation. If this is so and there is a deficient circulation to these joints, it must follow that massage must be given at frequent intervals. For this reason we have our patients bring in some interested member of the family for instruction in the use of massage at home, as it is useless to give massage three times a week and no more. Every physician should be able to prescribe massage as he would drugs for it is dangerous to turn a patient with arthritis over to a technician with only directions to give massage. Heavy massage over an arthritic joint may cause a marked local reaction. An arthritic case should have gentle kneading massage above and below the affected joint and no massage over an acute joint. When the joint becomes subacute, superficial stroking massage may be started over the joint in addition to the kneading massage above and below the joint. This should be preceded by at least fifteen minutes of heat. Massage should be given for about ten minutes twice daily. The details of the technic of massage are given in the Handbook of Physical Therapy, American Medical Association.

Associated with massage, electrical muscle stimulation of the graduated contraction variety is of great use. In graduated muscle contractions produced by electrical stimulation the good results are due to the direct stimulations of the muscles causing physiological contractions with all the natural changes dependent on such contractions and the mechanical effects due to the direct movement of the joint.

EXERCISE

This program is always started with a careful explanation of, and a prescription for, body mechanic exercises, because it is believed that a most important part of the treatment is to remove mechanical handicaps and to maintain

the best possible body mechanics. It has been noted that atrophic arthritis is much more common in the young and thin person with weak muscles, narrowed thoracic cages, with poor diaphragmatic excursion, with sagging abdominal viscera and with the weight bearing lines of their joints out of line. They are fatigued. Their posture (body mechanics) is poor. If these conditions can be changed by postural rest periods, body mechanic exercises and temporary supports, more room is provided in the thorax for heart and lung action, the diaphragmatic pump is set working again on the abdominal veins, the sagging of the abdominal viscera is relieved, and the normal weight bearing lines are restored to the painful joints. This causes a higher circulatory coefficient, more nearly normal alimentation and less fatigue. Hence the defense mehanisms of the body are given a better chance to overcome whatever bacterial or chemical toxins are being elaborated, which presumably are responsible for the pain in the joints.

In hypertrophic arthritis, the same principles of improving faulty body mechanics obtain. With its older age incidence, the remodeling of the body is harder, but, fortunately there is usually less remodeling to be done.

The time taken in explanation of the objects of this program is necessary as the patient's cooperation is absolutely essential. The patient and some interested member of the family are instructed in the use of the body mechanic exercises. The instructions are on mimeographed sheets. These exercises are based on the development of a firm flat lower abdomen. The position desired is standing so that the weight falls well forward on the outer borders of the feet, the lower abdomen pulled in and up, the back flat, the head up and chin in. The body should be stretched tall, without being rigid, the shoulders and chest will then fall into their own balance line. The physician should direct the patient carefully and check over the performance of these exercises every week, adding new ones and leaving off the easier ones as the patient improves.

For local joint conditions during the acute stage, deformity must be prevented by rest in proper supports, but painless active motion is encouraged. These joints should never be manipulated by passive exercise for swelling interferes with the circulation which is already poor and trauma is done the diseased tissues. During the subacute stage there are several forms of exercise that eliminate the weight of the extremity as a hindrance during movement and are helpful in allowing the patient to translate even minimal muscle power into active motion. In Gaenslen's sling suspension method the patient can exercise frequently for brief periods in the painfree range. With a home made tank in the average home the buoyancy of the water eliminates gravity and the warmth of the water relaxes the muscles and accelerates the blood flow.

After the acute and subacute stages have passed, free and resistive exercises are given on prescription by the physician. There should be a mimeographed sheet of exercises for each joint by which the physician can indicate the exercises to be used. The best results in the restoration of function in stiff joints following chronic arthritis is not from manipulation but by the gradual use of these joints by directed exercise and occupational therapy. In certain cases exercise apparatus is useful. Directions may be obtained from the author for the construction of stall bars for arm and leg exercises, a shoulder abduction ladder, a Kanavel hand table and stairs with rails for stair climbing exercise. Rest and exercise are essential to the function of a joint. Motion should be encouraged in all stages of the disease but this motion should be well within the fatigue limit. Exercise for a single joint is monotonous. The human body is more than a machine and the formal repetition of a movement either with or without an apparatus is not of maximum value in increasing the amount of movement in a stiff joint. There is not the psychological stimulant for personal incentive or sustained effort as in occupational therapy. Exercise given by an occupation with a definite object makes the patient forget the exercise because he is thinking of the task to be finished. This work must be directed definitely to exercise the part desired.

REST

Rest is an important physicial agent in the treatment of arthritis for chronic fatigue is one

of the symptoms of this disease. The physical signs of fatigue are also present such as subnormal morning temperature, poor pulse, vasomotor instability, low blood pressure, low metabolism and poor muscle tone. It is believed that this fatigue is due to disturbances of the normal physiology of the organs of the thorax and abdomen with effects on the circulation and sympathetic nervous system.

Rest should be prescribed with as much discrimination as any drug. Usually the rest should be in bed for certain periods daily or continuously. At first after each meal a pillow is placed under the shoulders, the hands are placed under the head, and a pillow is placed under the knees. This raises the chest and abdomen, hyperextends the dorsal spine, flattens the lumbar spine, and results in abdominal breathing with better use of the diaphragm.

After a half hour the face prone position is taken and radiant heat is applied to the spine to stimulate spinal circulation. These periods are given after meals whether the patient is in bed continuously or ambulatory. If continuously in bed these periods are continued until exercises and proper supports enable the patient to continue this correct position when up. They are then allowed up for increasing periods.

Rest is also an important agent in the local treatment of the affected joints. Rest and exercise are most important in the function of a joint. This rest should be in a position that is the best adopted to prevent strain or contracture, thus preventing deformities. The prescription of local rest illustrates the necessity of having the co-operation of an orthopedic surgeon in the treatment of chronic arthritis with physical therapy.

CONCLUSIONS

In chronic arthritis sufficient time for adequate treatment is fundamental and physical therapy is an important adjunct in treatment. Physical agents can be used by any physician, but to secure the best results, they must be carefully prescribed by the physician and used under his directions not only in the hospital and office but for longer periods at home by the patient assisted by some member of the family.

DISCUSSION

Dr. John H. Musser (New Orleans): After this very full and complete dissertation of Dr. Coulter on the treatment of arthritis, it hardly seems possible that I can add anything, and I do not think it is possible that I will add anything, but there are several things that I would like to comment on very briefly in the management of patients with arthritis.

In the first place, I would like you to bear in mind that we do not really know what arthritis is. We know something about the small twigs, the small branches of the disease, but when we come to the trunk our knowledge is nil. That does not alter the fact, however, that there are certain measures which can be employed and have been employed successfully in the cure of the disease, and while a good deal of this work is empirical, nevertheless, from what Dr. Coulter has shown you tonight, the basis for the treatment by physical therapy is reasonably well substantiated and proved. You recollect that the treatment of arthritis by physical means has been employed for an untold number of centuries and that the old Romans used heat as can be proved by the magnificent baths and bathing establishments that exist from the old times and which still remain in such places as Aix-les-Bains.

In the scientific management of these patients, I think it is perfectly safe to say that that particular method began with Krogh, to quote Dr. Coulter, when Krogh showed the capillary body is a mass of small channels which under ordinary circumstances are closed, but under certain stimuli they may be opened, then began the scientific management of arthritis by these methods.

Heat is of undoubted value and for the reasons Dr. Coulter mentioned. Heat opens this capillary bed and as a result there is increased circulation, increased corpuscular flow to the sick part, and increased possibility of the waste products being more efficiently removed. I have always looked upon heat as one of the features which should be employed prior to giving massage. I would like to ask Dr. Coulter if I am correct in that? Krogh has shown further that stroking massage of the part will also open the capillary bed somewhat, and give the same results as heat, so I am rather of the opinion it is better to begin with heat and then follow with massage, and as Dr. Coulter said, if you want to get results it cannot be obtained by making use of massage for an hour three times a week. It has necessarily to be repeated during the course of the day, not once, but even twice or three times.

The other methods employed in the treatment of arthritis such as exercise, posture exercises, rest,

are of course of extreme importance. It so happened that at one time I was in close contact with Dr. Pemberton and his work; I was assistant at the Presbyterian Hospital where he was chief. A very large number of patients came there. Occasionally, I would pick up a patient in more or less reflected glory. Pemberton used to show his cases at the staff meetings. I remember a definite statement that he made was that physical therapy was a most important measure in the management at least of the early cases of arthritis, and I can assure you that the directions we gave to the patients at the Presbyterian Hospital at times looked like more or less rigmarole. These patients had visited the clinics, the spas, and the hospitals; they had been all over and without definite positive results, and sometimes they looked absolutely hopeless, but with painstaking attention to detail and with the methods that Dr. Coulter has described to you tonight more fully than were practiced at the Presbyterian Hospital, I can assure you that the benefit and improvement of these patients was sometimes almost a miracle.

Dr. John S. Coulter (In conclusion): I do not think I have anything more to say except to answer Dr. Musser. We always use heat before we use massage, and our superficial massage is one of the most important things we do in massage. It is one of the easiest to teach and sometimes one of the hardest to give. Avoid Swedish massage.

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EXTENSION GRADUATE TEACHING IN LOUISIANA

It is a pleasure to be able to report that the Committee on Medical Education of the Louisiana State Medical Society has prepared a program for obstetrical teaching throughout the State of Louisiana. The Committee is to be congratulated on their prompt action in organizing graduate teaching in our State.

The first extension teaching, which will be in obstetrics, has been made possible through the cooperation of the Louisiana State Board of Health and the Committee on Maternal Welfare. It must be understood that this teaching is entirely a State Medical Society project. The plan is to meet for five evenings in one or another of the cities in Louisiana. A review lecture will first be given by the obstetrician in charge of the course which will then be followed by motion picture demonstrations, general discussion and conference.

This extension graduate teaching is a very real contribution by the State Society to its members and should prove of inestimable value. It is hoped that, once organized, it will continue indefinitely.

Not only should the members of the several committees, the President of the State Society and the Louisiana State Board of Health be commended, but a word of praise should be given the men who, at considerable personal sacrifice, are going to conduct the extension teaching.

THE NEW CHARITY HOSPITAL

The securing of a liberal grant from the United States Government plus the money voted by the last legislature will make possible the reconstruction of the Charity Hospital. The plans for this new plant, which have been appearing in the newspapers of recent date, indicate that an extremely high class, modern hospital is to be constructed. In this new hospital every facility will be provided for the adequate care of the sick. Not only will the hospital provide for the sick and injured but also facilities will be afforded for the instruction of medical students and medical graduates, an extremely important function of a really good hospital.

The appointment of Dr. George S. Bel as Director of medical activities of the Charity Hospital will insure the doing of a splendid job. The hospital authorities are particularly fortunate in that they have been able to obtain the services of this outstanding Louisiana doctor. On his broad and capable shoulders will be thrown a tremendous amount of work; multitudinous arrangements will be necessary to bring about the rapid construction of the new buildings, innumerable details will have to be guided by a strong hand, and questions of

policy will have to be decided by a strong personality.

MEETING OF THE PUBLIC HEALTH ASSOCIATION

Another large great medical organization will hold its meeting in New Orleans. This time it is the American Public Health Association whose sixty-fifth annual convocation will be held in New Orleans October 20-23. On the program of this outstanding meeting more than one hundred scientific sessions are listed with nearly three hundred speakers. Some of these are highly specialized programs ranging in the field of public health from sanitary engineering to epidemiology, from child hygiene to laboratory practice. The general sessions will deal with such important health measures as diphtheria immunization, mental hygiene and mosquito borne diseases. Particularly to be emphasized is the symposium on syphilis with four outstanding physicians taking part and including the Surgeon General of the United States Public Health Association, Dr. Thomas Parran.

A very large attendance is anticipated at this meeting. More than two thousand attendants are expected to register from every state in the Union, from Canada, Cuba and Mexico. These statements will indicate just how valuable this meeting will be and what a splendid opportunity it will give the doctors of Louisiana to take advantage of this which may truthfully be called a Pan-American assembly.

POOR TECHNIC

The recent announcement in the lay press of a drug which is presumed to cure arthritis, has received extensive publicity very generally throughout the country. The account of this new drug was introduced at the meeting of probably the largest national chemical society in the country. Undoubtedly the primary reason for the acceptance of this paper had to do with the chemical structure of the preparation, but unfortunately, in so far as can be judged from the press, the chief feature of the presentation had to do with the marvelous (?) results obtained in patients who had arthritis when this drug was administered to them. Very prompt exception was taken by the officials of the American Medical Association to the apparent endorsement of this drug by a reputable society. The preparation had not had adequate clinical control. It had never been submitted to the Council on Pharmacy and Chemistry of the A. M. A. nor were the specifications laid down by the Council before recognizing a drug, and which are undoubtedly fair and perfectly just, adhered to.

Criticism is sometimes made of the American Medical Association that when new drugs are introduced that this society of medical men has adopted a policy which is procrastinating and which delays for years the opportunity of the sick individual to obtain something in the pharmaceutical line that is new and of value. This criticism is not valid. It is only by careful clinical study of new drugs and medicinal preparations that it is possible to evaluate their worth. This cannot be done in a day, a month or a year.

An effort is not being made to stand up for the Council on Pharmacy and Chemistry of the A. M. A. Its accomplishments speak for themselves, but it is felt that an entirely wrong technic was used in attempting to introduce a new drug through decidedly round about channels. This possibility of presenting to the general public new drugs through reputable and high standing organizations is a new approach to something which smacks very closely of charlatanism. It is rather remarkable that the great organization before which announcement was made of this preparation for arthritis, should sponsor something which is decidedly within the realm and jurisdiction of medicine, which is well qualified to take care of such matters.

HOSPITAL STAFF TRANSACTIONS AND CLINICAL MEETINGS

J. T. NIX CLINIC

NEW ORLEANS

At a meeting held in September the following paper was presented by Doctors L. A. Fortier and T. T. Gately.

X-RAYS IN CHRONIC APPENDICITIS

In acute appendicitis, the use of roentgen ray examination is unnecessary and may even, by the loss of valuable time and ingestion of foreign material in the intestinal tract, prove dangerous to the patient. About the only roentgen ray procedure justifiable in acute cases would be a radiograph of the urinary tract to exclude urinary calculi. In chronic and subacute cases, roentgenographic and roentgenoscopic examinations will elicit a great deal of information distinctly valuable to the patient and to the surgeon.

Our method of choice is the examination of the entire gastrointestinal tract with a barium meal. The patient is seen fasting and the stomach and duodenum examined to exclude possible pathology in this region for, as is well known, chronic and subacute appendicitis frequently give rise to symptoms referable to the upper gastrointestinal tract. The patient is seen again in six hours at which time the barium meal should have reached the cecum. A twenty-four hour examination is made routinely, and forty-eight and seventy-two hour examinations are made if indicated and desired. The chest is also routinely fluoroscoped to exclude gross pathology in the lungs, especially in the right base, for pathology there frequently simulates appendicitis.

The location of the cecum should be noted as this is often important to the surgeon in determining the type of incision. It often also clinches the diagnosis of appendicitis. Under the fluoroscope, the cecum is examined for mobility and tenderness. The presence of tenderness over the cecum is probably the most important diagnostic finding, and it can be readily understood that the radiologist in this respect has a distinct advantage over the clinician. If visualized, the appendix is palpated over its extent for tender points and for mobility. Various other findings such as kinking of the appendix, irregularlity in its outline, seventy-two hour stasis, have been considered significant in diagnosing appendicitis, but there is considerable dispute among radiologists as to their value. The location of the appendix is noted, whether it is in the normal position or to the right of or behind the cecum. A retro-cecal appendix, while not always pathologic, is certainly not fortuitous, and should be looked upon with deep suspicion.

It must be realized that a good radiologist will make use, not only of radiological findings, but also of whatever clinical information is available. A brief history is always obtained, especially of previous operations to avoid the possibility of reporting appendicitis in a patient whose appendix has already been removed, as frequently following appendectomy, tenderness over the cecum may be elicited over a period of years.

The colon is carefully examined to exclude or demonstrate such conditions as diverticuli, malignancies, or colitis, which may becloud or complicate the patient's condition.

In conclusion, emphasis should be laid on the fact that roentgen rays are extremely valuable in excluding pathology in portions of the intestinal tract other than the appendix, in the lungs and urinary tract. It should be emphasized also, that the demonstration of a tender cecum or tender appendix is the most important single radiological diagnostic finding in appendicitis.

OSCAR ALLEN TUMOR CLINIC
CHARITY HOSPITAL

NEW ORLEANS

The scientific meeting of September, 1936, was called by Doctor J. T. Nix, Director. The essayist was Doctor C. E. Gorman who presented the following paper.

PRIMARY MULTIPLE MALIGNANCIES

For many years multiple malignancies have been considered as medical "curiosities" or "freaks". A number of authors profess the belief that these are due entirely to chance. It is the purpose of this paper to show the incidence of multiple malignancies as seen in the Tumor Clinic of Charity Hospital, to show that these cases are not "curiosities" due entirely to chance, that they are clinical as well as histological entities, and lastly, to create thought and discussion from a genetic and hereditary viewpoint.

The first case report of multiple primary tumors was given by Billroth as early as 1860. In considering the diagnosis of multiple tumors, he evolved three rules which he considered necessary to establish a true diagnosis. These rules were later named Billroth's criteria. Two of these are well founded. The third, concerning metastasis, is too rigid for routine consideration. Billroth's criteria are:

1. Independent histologic appearance.
2. Arising in different situations.
3. Producing its own metastasis.

Let us consider the frequency of multiple tumors. Hansemann[1] in 1,000 autopsies found five cases of multiple primary malignancies. Gade[1] reviewed 4,219 cases of malignancies of which 0.76 per cent were multiple tumors.

From the State Institute for the Study of Malignant Disease, Buffalo, New York[2], comes some very interesting data. It is their opinion that

primary multiple cancer is a great deal more frequent than has been heretofore recognized or acknowledged. Of their total number of malignancies observed, they report 2.7 per cent as being cases of primary multiple cancers.

In 1932 Shields and Gates[3] made an exhaustive rievew of the literature on the subject of primary multiple cancer. Their statistics regarding the percentage of frequency were put into three divisions. The only figures considered were those obtained throughout the United States and the author's own series of cases. The results were 1.84 per cent, 3.9 per cent, and 3.7 per cent respectively. Of particular interest from genetics as well as a histo-pathological study, is a series reported by Borgen and Coffey[4]. These authors observed 1,500 cases of chronic ulcerative colitis. Of this number thirty developed cancer. Seven of the latter number were multiple malignancies. Along the same line is a case reported by Felsen and Wells[5]. It is one of adenomatosis coli and carcinoma. The authors point out the high incidence of malignant degeneration and especially an underlying tendency to multiplicity.

The question of effect and etiology of multiple tumors is often discussed. Lund[6] gives the opinion that in multiple cases there is no evidence that the two lesions have either a favorable or an unfavorable effect on each other. These lesions must be considered as separate cancers. We agree with Lund that each cancer must be handled separately. On may be radio-sensitive and another radio-resistant. We also believe the prognosis to be more grave where multiple malignancies exist. This multiplicity of lesions is strong evidence that these patients have a cancer diathesis; therefore, the possibility of their having a recurrence is maximal.

Other interesting cases were reported by Goldstine[7] and by Skeelaus and Haskell[8]. The most interesting case of multiple malignancy[9] which reviewed was the one which we may term the "Pathological museum—walking." At autopsy four tumors were found. Three were malignant and one benign. In addition to this, the man had had a rodent ulcer excised some years previous. The tissues showed adenocarcinoma of the liver; adenoma of the kidney; carcinoma of the face, basal cell type; and epidermoid cancer of the penis.

In the past three years there have been six cases treated at the tumor clinic of Charity Hospital, New Orleans. This is 1.5 per cent of the entire number of malignancies seen at that clinic. All six of these cases meet with Billroth's postulate in two ways. They are definitely different cancers by histological study. The site of occurrence is far removed, one from the other. As for the metastasis, we hope the patients will not have recurrences or metastasis in these cases. One of the more interesting cases is that of:

Case 1. J. G., Number 20,486, a 69 year old white man with transitional cell carcinoma, grade III, was apparently cured in 1933. He returned on September 1, 1936, with a lesion on the right hand and one in the floor of the mouth on the left side. The latter was reported as early transitional cell cancer, the former as squamous cell carcinoma, grade II.

Probably the most complicated case of this group seen in the clinic was that of:

Case 2. Mrs. J. B. V., Number 108,423, a 73 year old white female was admitted to the hospital on May 22, 1924, with a marked enlargement of the thyroid. On May 24, 1924, the thyroid was removed for adenoma. It was reported fetal adenoma and careful study revealed no malignancy. Six years after operation the gland began to enlarge. In February, 1934, she had profuse mouth hemorrhage for several days. Roentgen ray showed destruction of the larynx, and indirect laryngoscopy, paralysis of the left vocal cord. Biopsy of a nodule on the left side of the gland showed carcinoma. From February 14, to March 16, 1934, the patient was given 3,100 roentgens over the thyroid. This caused considerable regression but at the time of admission to the Tumor Clinic, the thyroid was so vascular that extra-systoles could be detected by palpation of the gland. An operation was advised but the patient would not consent. In October, 1934, 1,600 roentgens were given to the thyroid. A small node appeared on the left side of the neck in February, 1935, and 2,400 roentgens were given to the cervical area. In September, 1935, the right labium major was excised for lesion which was found to be squamous cell carcinoma, grade II. One thousand milligram hours were given to the vulva with a radium mold on October 10, 1935. Activity was noticed in the left labium in January, 1936, and is was excised. The thyroid began to enlarge in May, 1936, and 1,600 roentgens were given over it and to the recurrence of the cervical metastasis. The patient has become aphonic and has remained so for two months. This was a case of a carcinoma of the thyroid and squamous cell carcinoma of the vulva.

Case 3. F. C., Number 123614, a white male, 56 years old, was admitted October 11, 1934. The medial half of the hand had been amputated one month previous for extensive squamous cell carcinoma, grade I. The lesion had developed in the scar of an old injury of the hand. General health was good. The incision had not healed completely but there was no evidence of neoplastic activity. The index and thumb, the only remaining fingers, had good function. No epitrochlear or axillary nodes were palpable. On November 30, 1934, the patient returned. The hand looked well but he had noticed the growth of a "mole" on the right side of the face. The lesion was excised and was reported squamous cell carcinoma, grade I. On

May 24, 1935, the patient returned with pain and swelling of the muscular tissues of the forearm, the result of a fall sustained three weeks before. Roentgen ray showed no bone pathology. The forearm was aspirated and bloody fluid was obtained. Smear showed no neoplastic cells. The condition was diagnosed post-traumatic hematoma. In July, 1935, the patient returned with greater swelling of the forearm which was painful, red and tender. Aspiration yielded clear, straw-colored fluid. It was believed that a cavity of the hematoma had become infected and he was admitted to the hospital for drainage. The swelling was incised anteriorly and posteriorly and tissue obtained from the depth of the lesion was reported squamous cell carcinoma, grade I., no epitrochlear or axillary adenopathy. The patient refused amputation. Radiation was given to the tumor and to the axilla. In January, 1936, the arm was severed above the elbow. Thorough examination of the tumor showed only malignancy of the lowest grade. Large axillary nodes developed in March, 1936, when radiation was again instituted. Roentgen ray of the chest showed no pulmonary metastases, but the patient's general condition rapidly grew worse and he succumbed. This was a case of squamous cell carcinoma of the right hand and face, grade I.

Case 4. A. P., Number 63,337 white male, 87 years old, was first admitted December 26, 1933, with an enlarged upper lip, ulcerated on the facial and buccal surfaces. Enlargement had been progressing for a year; roentgen-ray therapy had been tried without benefit. His general health was robust despite his years. No cervical nodes were palpable. Biopsy from the buccal surface showed bascal cell carcinoma. On January 5, 1934, the tumor received 1,200 mghrs. of radium with a mold. This secured healing but ulcers reappeared in July, 1934, and March, 1935. These were treated with radium, giving 300 and 200 mghrs, respectively. In December, 1935, the entire upper lip was indurated and had an ulcerated deep notch. Biopsy from the buccal surface showed transitional cell carcinoma, grade III. On December 10, 1935, 300 mghrs. of radium were applied locally. Because fibrosis was so extensive healing was poor, and in March, 1936, the entire upper lip was resected. Sixteen hundred roentgens were given to each side of the neck. The patient is doing nicely. This is a case of a basal cell, and a transitional cell carcinoma of the upper lip.

Case 5. J. S., Number 18,409, white male, 57 years old, was admitted to the hospital May 22, 1934, with an extensive ulceration of the left ear. The ulcer had begun in 1930 in front of the ear and continued to enlarge, extending over the pinna despite nine applications of a radium plaque at intervals of two to three months. On January 4, 1934, 2,150 mghrs. had been given with a radium mold. Roentgen-ray therapy was given weekly for three months. No benefit was obtained from this radiation. The ulcer was painful and it suppurated. It measured about 9 centimeters in diameter and was excavated. There were no palpable cervical nodes. The general health was excellent. Biopsy showed carcinoma, probably arising from sweat glands. An effort was made to clean up the infection. He was admitted to the hospital for excision to be followed by radiation but he deserted without treatment. He returned in November with pulmonary symptoms and died November 30, 1934, of pneumonia.

Autopsy showed consolidation of areas of the lungs. Upon stripping the dura from the base of the cranium, an erosion was noted extending through the lateral aspect of the temporal bone anterior to the left external auditory meatus, but there was no meningitis. In the depth of the facial ulcer a small hard, pearly mass was found which on microscopic study proved to be a mixed tumor of the parotid with cartilage formation. Occasional areas suggested an adeno-adamantinomatous growth. The diagnosis was lobular pneumonia; generalized cloudy swelling of the viscera; basal cell carcinoma of the face; mixed tumor of the parotid.

Case 6. J. R., Number 12,160, white male, 69 years old, was admitted on October 19, 1933, complaining of a lesion on the lower lip, of one year's duration. Biopsy was refused. The clinical diagnosis was basal cell carcinoma. The patient recived 4,448 roentgen units from October 20, to November 2, 1933. He returned on February 6, 1934, with a lesion on the right side of the nose, apparently a basal cell carcinoma. He received 2,720 roentgen units in three treatments. On September 28, 1934, he again applied for treatment complaining of a left post auricular mass. Biopsy showed this to be squamous cell carcinoma, grade II. Excision was done and the patient received 1,600 roentgen units to each side of the neck. He was seen again on August 20, 1936; all lesions had healed and there were no signs of recurrence. This is a case of "clinical" basal cell cancer and squamous cell carcinoma.

Each of the foregoing cases presented histopathological differences and usually a variability of location which would corroborate the impossibility of metastases.

Having studied the cases presented in this series, we are of the same belief as Bugher[10]: He has made an extensive study of the possibilities and probability of occurrence. This data with the six cases of the Tumor Clinic enabled us to conclude af follows:

CONCLUSIONS

1. The incidence of multiple cancer exceeds the number we would expect from chance.

2. One and a half per cent of the cases in the

Tumor Clinic of Charity Hospital were multiple malignancies.

3. Multiple cancer is a clinical histological entity.

4. Cancer diathesis is the logical explanation for multiple malignancies.

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HUTCHINSON MEMORIAL CLINIC

Scientific section presented by the Department of Obstetrics, Dr. H. Weinberg presiding.

Dr. Weinberg: The first case I have to present is a diagnostic problem, and the patient will be shown later for any suggestions you have to offer. She is a 41 year old multipara. We delivered her of her last child in December, 1934. This pregnancy was normal in all respects. Following this pregnancy, the patient had no period until July, 1935. When the periods restarted they were irregular and the flow somewhat excessive. In July, 1935 the patient again began to menstruate and menstruated until November, 1935. After she missed this period she became nauseated and continued to be so until January. No other symptoms of pregnancy were present. In March, 1936 the patient first started bleeding in small amounts. On awakening in the morning she would find her pajamas spotted with blood. She presented herself to this clinic for the first time on March 9, 1936, at which time she was bleeding slightly. Because of the bleeding no vaginal examination was done, but the uterus could be palpated 7 cm. above the symphysis pubis. A Friedman test at this time was positive. On bed rest and symptomatic treatment bleeding stopped and has not appeared to the present date. There has been from this time to the present a very small growth of the size of the uterus. Measurements of the uterus show:

3- 9-36	7 cms.	(Admission)
4-28-36	10 cms.	
7- 3-36	11 cms.	
7-17-36	11½ cms.	
8- 7-36	11½ cms.	
9- 2-36	11½ cms.	

A Friedman test in May, 1936 was strongly positive and again in August was still strongly positive. In spite of this test presumably positive for pregnacy, the uterus has not grown correspondingly. In the last two months there has been only an increase of a half centimeter in the size of the uterus. Physical examination, blood record and Wassermann are normal.

In the discussion Dr. W. H. Perkins suggested an x-ray as an aid in establishing a differential diagnosis between a pregnancy and any soft tissue growths within the uterus. Dr. Alfred Gage asked of the possibility of any obstruction of the cervical canal which might retain products within the uterus. A question as to the accuracy of the test was brought up by Dr. Perkins and Dr. J. L. Dixon, but the Department of Obstetrics believed the test to be dependable in this case, particularly because of extra precautions that had been taken.

Dr. Weinberg in closing made the suggestion that probably the patient had been pregnant up until the time of her original bleeding as borne out by the Friedman test, and had lost the pregnancy during this period of bleeding, had subsequently become pregnant again. The other possibility was that the patient had lost the pregnancy but had retained enough placental tissue in the uterus to cause the Friedman test to remain positive and the uterus to retain its size. The Department of Obstetrics feels that hydatidiform mole has been ruled out. The Department will investigate the case further.

Dr. Weinberg: The second case I have to present is a follow-up report. As some of you may recall, the patient presented herself at this clinic to be delivered of her child. On admission July 14, 1935, she was about five weeks pregnant. A Friedman test came back positive. The patient complained of myriads of symptoms, chief of which was persistent vomiting, which became so bad that on July 28 she was admitted to a local hospital. Here she was given symptomatic treatment, part of which was 30 grains of bromide twice a day. In the hospital, she was given a blood transfusion, but no Wassermann was run on the donor previous to the transfusion. While in the hospital she broke out with a profuse rash, which was interpreted there as a bromide rash, and the bromide discontinued. She returned to the clinic on August 18 worse instead of better and with her body covered with a diffuse papular rash. A Wassermann was strongly positive; her initial

Wassermann had been negative. The diagnosis of secondary syphilis was made and it was felt that the patient had contracted syphilis from the donor of the blood. A Wassermann was therefore run on the donor, which returned strongly positive. A Wassermann on the patient's husband was negative and has remained so. A check of the patient's spinal fluid revealed a positive spinal Wassermann, many lymphocytes and a trace of albumin. We feel that this is definitely a case of syphilis contracted through blood transfusion. The patient was placed on antileutic treatment and responded nicely, although not ideally. She was delivered of a live child in January, 1936. This child has been given antileutic treatment and has responded well.

In the discussion Dr. Willoughby Kittredge of the Department of Urology stated that regarding the antileutic treatment the patient is not satisfactory in that she is delinquent much of the time. The patient is apparently psychoneurotic and many of her complaints are on that basis. Dr. Alton Ochsner asked if there were any history of primary lesions in the donor, but information in this respect was lacking. Dr. Ochsner quoting Dr. Morgan, Professor of Medicine at Vanderbilt University, stated that syphilis can be transmitted in the blood only when the donor is in the secondary stage. Dr. Perkins cited a case in which a man had given 30 transfusions then went off for a rest and came back in six weeks. He offered himself as donor at this time and the patient contracted a very severe spinal syphilis. Dr. Ina Harper, reporting from the Department of Pediatrics, said that the patient's baby was getting along excellently.

Dr. Weinberg: The third case is that of a multipara—para VI who presented herself at the clinic on May 6, 1936 for deliverey. Previous pregnancies were normal. On admission the patient weighed 222 pounds. The blood pressure was slightly elevated but subsequently dropped to 112/70, and remained such during her treatment here. Patient went along normally, except for persistent gain in weight. On June 3, 1936, she weighed 230 pounds; on July 1, 1936, she weighed 239 pounds; July 8, 1936, after being placed on a salt-free, low protein diet, the patient's weight dropped to 234½, but the following week had jumped to 243 pounds. At this time she was complaining of some shortness of breath, and marked edema of the feet. She was referred to the Department of Medicine, where a diagnosis of heart failure was made. An attempt to digitalize patient failed. The patient felt somewhat better. On July 15, patient weighed 252½ pounds, a gain of 9½ pounds in one week. She was sent to a hospital on that day. Unfortunately, because of crowded conditions, it was impossible to admit the patient until four days later. A urinalysis, which had been run in this clinic when patient was last seen here, was negative. On admission to the hospital temperature was 98.6° F, pulse 80 per minute, respiration 20 per minute. She was placed on a low caloric (1000 calories per day) diet, and fluids restricted to 1000 c. c. daily. These plus absolute bed rest benefitted the patient, her output increased over her intake, and much of the edema subsided. Unfortunately, the initial urine was discarded, but that run four days after her admission showed 4 per cent albumin, which subsequently jumped to 8 per cent three days later. A consultation with an internist was asked. He found no evidence of right-sided heart failure. Her blood pressure, which had never gone above 112/70 at Hutchinson Memorial Clinic jumped to as high as 190/110 in the hospital. At the time of admission to the hospital, patient was eight and a half months pregnant. She was at her optimum condition after one week in the hospital. After this time, she started sinking slowly. A week later a bag induction was started and after 25 hours, a live baby was born. The immediate postpartum was good. Her respiration rose to 28, temperature which was 101°F. at time of insertion of bag, jumped to 103° F. the night after delivery. Patient became gradually worse and in spite of treatment, died the following morning. The last voided specimen was milky-white in color, and full of red and white cells.

A complete autopsy done on the patient showed the cause of death to be a severe pyelonephrosis. There was in addition a hypostatic pneumonia of both lungs, a slight hypertrophy of the heart, and a rather severe toxic hepatitis; this was also felt to be one of the main contributing causes of death. The gallbladder was slightly diseased and four stones were present. The bladder showed marked cystitis and was badly diseased. The heart revealed a mild hypertrophy, but was not at all in proportion to the suspected clinical suspicion.

In the discussion it was considered that the early variations in weight may have been evidence of disease of the kidneys, and that her subsequent symptoms were those of kidney disease and not due to failure of the heart.

SHREVEPORT MEDICAL SOCIETY

The regular meeting of the Shreveport Medical Society was called to order by the President on September 1, 1936, with 33 regular members and one guest present. Minutes of the previous meeting were read and adopted.

Committee Reports: Dr. Lucas, Chairman of the Social Affairs Committee, reported that at the social meeting last month there were 106 present and that there had been a net gain of $7.65. There being no further committee reports, attention was then turned to the scientific program.

Scientific Program: Dr. T. M. Oxford read a very interesting and instructive paper regarding

strains and sprains, emphasizing the desirability of more careful treatment of sprains to prevent recurrences and lengthening of disability. This paper was discussed by Dr. Pirkle.

Dr. Dorf Bean then presented a brief discussion concerning tonsillar infection in children and adults, pointing out that he got about 70 per cent good results in children and young adults, but a higher percentage, approximately 100 per cent, in older cases. In the discussion, it was pointed out that three years is usually the earliest age at which tonsillectomy should be done, unless the tonsils are badly involved. It was further pointed out that in some of the very young cases it was desirable to remove the adenoids if they were the offending structures, leaving the tonsils alone.

New Business: Application for membership of Dr. DeLee was received and the Society voted that it take the usual course. On this committee were appointed Dr. D. M. Pipes, Chairman, Dr. Paul Winder and Dr. C. R. Mays.

Paul D. Abramson, M. D., Sec.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR

OCTOBER 1 Pathological Conference, Hotel Dieu, 11 a. m. to 12 noon.

OCTOBER 5 Special Meeting, Orleans Parish Medical Society, 8:30 p. m.

OCTOBER 5 Board of Directors, Orleans Parish Medical Society, 8 p. m.

OCTOBER 5 Eye, Ear, Nose and Throat Staff, 8 p. m.

OCTOBER 7 Clinico-Pathological Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

OCTOBER 7 Woman's Auxiliary, Orleans Club, 3 p. m.

OCTOBER 7 Board of Governors, 1st and 2nd District Dental Society, 8 p. m.

OCTOBER 7 Mercy Hospital Staff, 8 p. m.

OCTOBER 9 Pathological Conference, Hotel Dieu, 11 a. m. to 12 noon.

OCTOBER 9 French Hospital Staff, 8 p. m.

OCTOBER 12 ORLEANS PARISH MEDICAL SOCIETY, 8 p. m.

OCTOBER 13 Charity Hospital Dental Staff, 8 p. m.

OCTOBER 13 Touro Infirmary Staff, 8 p. m.

OCTOBER 15 Eye, Ear, Nose and Throat Club, 8 p. m.

OCTOBER 16 Pathological Conference, Hotel Dieu, 11 a. m. to 12 noon.

OCTOBER 16 I. C. R. R. Hospital Staff, 12 noon.

OCTOBER 19 Hotel Dieu Staff, 8 p. m.

OCTOBER 20 Charity Hospital Medical Staff, 8 p. m.

OCTOBER 21 Clinico-Pathological Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

OCTOBER 21 Charity Hospital Surgical Staff, 8 p. m.

OCTOBER 21 1st and 2nd District Dental Society, 8 p. m.

OCTOBER 23 Pathological Conference, Hotel Dieu, 11 a. m. to 12 noon.

OCTOBER 26 ORLEANS MEDICAL SOCIETY, 8 p. m.

OCTOBER 27 Baptist Hospital Staff, 8 p. m.

OCTOBER 28 Clinico-Pathological Conference, Touro Infirmary, 11:15 a. m. to 12:15 p. m.

OCTOBER 30 Pathological Conference, Hotel Dieu, 11 a. m. to 12 noon.

DR FISHBEIN TO SPEAK

Dr. Morris Fishbein will address the Orleans Parish Medical Society on October 1, 1936 in the auditorium of the Society at 1430 Tulane Avenue. Dr. Fishbein will speak on "New and Changing Social Order in Medicine."

Another distinguished visitor to come to New Orleans will be Mr. Archibald M. McIndoe of London, England, who is one of the leading plastic surgeons of the British Empire. Mr. McIndoe will address the Orleans Parish Medical Society on Monday, October 5, 1936 at 8:30 P. M.

LOUISIANA STATE MEDICAL SOCIETY NEWS

1937 ANNUAL MEETING

General Chairman: Dr. D. T. Milam, Monroe

Advisory Board: Dr. R. W. O'Donnell, Monroe
Dr. J. Q. Graves, Monroe
Dr. J. B. Vaughan, Monroe
Dr. A. G. McHenry, Monroe
Dr. C. P. Gray, Sr., Monroe

Hotel Headquarters: Frances Hotel.

The Ouchita Parish Medical Society, hosts to the State Society for the 1937 Annual Meeting, announce the appointment of the above listed physicians to have charge of the details of the meeting. There is no question that under the active leadership of the General Chairman, Dr. Milam, with the help and assistance of the extremely capable Advisory Board, this meeting in Monroe will be one of the outstanding meetings of recent years.

Note that the Hotel Headquarters are at the Frances Hotel. While this Hotel has adequate

capacity for taking care of many of the visitors next April, those desiring to obtain reservations in the headquarters hotel should apply promptly

EXTENSION GRADUATE TEACHING IN LOUISIANA

The following is the tentative program for the course in obstetrics to be held under the auspices of the Louisiana State Medical Society.

These meetings will be held every evening for five consecutive nights beginning at seven and closing at nine o'clock. The first conference will be given Monday and the last Friday. Lectures, motion picture demonstrations, consultation conferences and general discussion will be on the program each night. The necessary expenses for these meetings are being financed from the Social Security fund.

October 5- 9—Minden—Fourth District—Dr. J. W. Reddoch.

October 12-16—Ruston—Fifth District (Speaker in charge to be selected).

October 26-30—Bastrop—Fifth District—Dr. A. Caire.

November 2-6—Hammond—Sixth District—Dr. P. Carter.

November 9-13—Natchitoches—Eighth District—Dr. C. R. Mays.

November 16-20—Opelousas—Seventh District—Dr. Peter Graffagnino.

November 30—December 4—Jennings—Seventh District (Speaker in charge to be selected)

December 7-11—Franklin—Third District—Dr. E. L. King.

December 14-18—Donaldsonville—Sixth District—Dr. W. Levy.

NEWS ITEM

Dr. H. W. Kostmayer, Dean and Professor of Gynecology in the Graduate School of Medicine of Tulane University, and President of the State Society, addressed the meeting of the Bi-Parish Medical Society held at Jackson, La., on August 5, 1936, on "Endocrine Problems in Gynecological Practice".

Dr. Kostmayer also addressed the Central Medical Society at their meeting held at Jackson, Miss., on Sept. 1, 1936. The subject of the lecture was "Clinical Applications of the Endocrines in Gynecology."

The International College of Surgeons, with headquarters in Geneva, Switzerland, wishes to announce that it will hold its first examination for Membership and Fellowship sometime before January 1, 1937. In the United States the examinations will be held in New York City, Chicago, Durham, N. C., San Francisco, San Antonio, Texas and Rochester, Minn. The fee for the examination will be $250.00.

Assistant Surgeon C. E. Blankenship has been relieved from duty, New Orleans, La., on or about September 19, 1936 and ordered to U. S. Marine Hospital, Baltimore, Md., for duty, on or about September 23, 1936.

Assistant Surgeon T. H. Tomlinson, Jr., has been relieved from duty, U. S. Quaratine Station, New Orleans, La., on September 12, 1936 to proceed to Washington, D. C., for duty in the Scientific Research Division.

RESERVE OFFICERS TRAINING

Notice has been received from the headquarters of the Seventh Corps Area, too late to publish in the September Journal, to the effect that the eighth annual inactive duty training for reserve officers of the Army and Navy will be held at Mayo Clinic, October 4-17, 1936.

DR. FISHBEIN

Dr. Morris Fishbein, editor of the Journal of the American Medical Association, will pay a visit to New Orleans the first week of this month. In addition to addressing the Orleans Parish Medical Society, Dr. Fishbein will talk to the students of the Tulane Medical School and the Louisiana State University Medical School.

Dr. Joseph T. DeGrange, who for nearly half a century was the physician to the New Orleans Fire Department died at his home in New Orleans September 1, 1936. His death followed a very brief illness. He was interested in first aid work and was chairman of the first aid committee of the local chapter of the American Red Cross. In 1930 he conducted the first junior first aid Red Cross course ever to be given to a Boy Scout troop. In return for his services he was made "honorary tenderfoot scout" and was awarded a medal.

Dr. Camille P. Brown, former chief surgeon of the Illinois Central Hospital in New Orleans, died Sunday, September 6, 1936 in a hospital in St. Louis to which he had been taken the previous week for treatment of an illness which began several years ago. Dr. Brown, a native of New Orleans, attended Spring Hill College and obtained his medical degree from Tulane University Medical School. Most of his career was spent in the service of the Illinois Central Railroad Company. However, a few years ago he resigned to enter private practice in New Orleans.

Dr. J. D. Hunter, supervisor of the Acadia Parish Health Unit, died at Touro Infirmary, New Orleans, September 16, 1936. Dr. Hunter was formerly a member of the Louisiana Legislature. He was a graduate of the University of Tennessee Medical School.

HEALTH OF NEW ORLEANS

The Department of Commerce, Bureau of Census reports that for the week ending August 15, there were 151 deaths in the city of New Orleans; 101 white and 50 colored. The death rate for the group as a whole was 16.4, for the white race 15.4 and for the colored 18.7. The infant mortality rate this week was 64. For the next week, ending August 22, there was a slight decrease in the total number of deaths there being 138, divided 72 white and 66 colored, with a death rate for the three groups of 15.0, 11.0 and 24.7. The infant mortality rate this week was 93. The succeeding week the death rate remained almost the same as the preceding week, being 15.1 for the population as a whole and for the white 14.1 and for the negro population 17.6, resulting from 139 deaths divided 92 white and 47 colored. The infant mortality rate was 99. For the first week of September, ending on the 5th, the total deaths increased to 154 of which 96 were white people and 58 were colored. The death rate for the three groups respectively was 16.7, 14.7 and 21.7. There was a considerable increase in the infant mortality rate which was 134, the rate for the white being 128 and the negro 141. A short drop occurred in the total deaths for the week ending September 12. The death rate was well below the 37 week rate of 18.7, being only 13.7. This was due to the low rate of 11.2 for the white population and the low comparative rate of 19.9 for the negro. These figures were obtained as a result of 126 deaths, apportioned 73 for the white and 53 for the colored. The infant mortality rate was only 52.

INFECTIOUS DISEASE IN LOUISIANA

Dr. J. A. O'Hara, Epidemiologist for the State of Louisiana, has furnished us with the weekly morbidity reports for the State of Louisiana, which contain the following summarized information: For the week ending August 22, the 34th week of the year, the following diseases were reported in double figures; 56 cases of pneumonia, 48 of malaria, 35 of cancer, 37 of pulmonary tuberculosis, 29 of typhoid fever, 22 of influenza and 18 of syphilis. Typhoid fever cases were reported throughout the State; Caddo and Orleans Parishes leading with 6 and 7 cases, respectively. Two cases of poliomyelitis were reported, 1 from Orleans and 1 from St. Martin Parish. One case of typhus fever was reported from Calcasieu. Practically all of the typhoid fever cases reported from Orleans Parish were imported and the case of poliomyelitis listed from Orleans was also imported. For the following week, ending August 29, malaria led all reported diseases with 54 cases listed. This was followed by 53 cases of pneumonia, 35 of pulmonary tuberculosis, 32 of gonorrhoea, 31 of syphilis, 30 of cancer, 23 of influenza and 21 of typhoid fever. Of the unusual diseases, 3 cases of typhus fever were reported from Orleans Parish. No Parish had more than 3 cases of typhoid fever this week. For the week ending September 5, there were listed 87 cases of syphilis and 63 cases of pneumonia, a sharp rise in the latter disease. Other diseases in double figures included, 49 cases of malaria, 48 of pulmonary tuberculosis, 33 of typhoid fever, 30 of cancer, 28 of gonorrhea, 15 of influenza and 10 of diphtheria. During this week 3 cases of poliomyelitis were reported, 1 from Caddo and 2 from Ouachita Parish. Orleans Parish, with 8 cases of typhoid fever, reported more than any other Parish. This was followed by 5 cases from Union Parish. The 37th week of the year, ending September 12, pneumonia led all other reported diseases and was almost double the average, there being 52 cases listed.

The other reported diseases included 26 cases of pulmonary tuberculosis, 25 of typhoid fever, 23 of cancer, 17 of influenza, 16 of syphilis, 14 of malaria and 12 of gonorrhea. Of the unusual diseases, 1 case of typhus fever was reported from Calcasieu Parish, 1 case of undulant fever from E. Carroll, 1 case of poliomyelitis from LaSalle and 1 case of epidemic cerebrospinal meningitis from Orleans.

WOMAN'S AUXILIARY

Louisiana State Medical Society

President—Mrs. James Byron Vaughan, Monroe.
President-Elect—Mrs. George D. Feldner, New Orleans.
First Vice-President—Mrs. F. G. Ellis, Shreveport.
Second Vice-President—Mrs. T. H. Watkins, Lake Charles.
Third Vice-President—Mrs. E. B. Middleton, Homer.
Fourth Vice-President—Mrs. R. R. Arceneaux, Welsh.
Recording Secretary—Mrs. C. Grenes Cole, New Orleans.
Corresponding Secretary—Mrs. Joseph P. Brown, Monroe.
Treasurer—Mrs. Courtland P. Gray, Monroe.
Parliamentarian—Mrs. R. T. Lucas, Shreveport.

So that we may all become familiar with the names of the ladies serving the State and Parish Auxiliaries, listed below you will find the officers of the various parishes, and State Councellors. Some of these names have been listed before, but this month's publication of the Journal gives you a complete set-up:—

COUNCELLORS

First District—Mrs. Russell E. Stone.
Second District—Mrs. Frances Hava.
Third District—None.
Fourth District—Mrs. C. P. Rutledge.
Fifth District—Mrs. A. G. McHenry.
Sixth District—None.

Seventh District—Mrs. Stackley Hatchett.
Eighth District—Mrs. M. B. Pearce.

CADDO PARISH

President—Mrs. R. T. Lucas.
President-Elect—Mrs. J. T. Crebben.
First Vice-President—Mrs. W. J. Sandidge.
Second Vice-President—Mrs. M. S. Picard.
Recording Secretary—Mrs. E. L. Gill.
Corresponding Secretary—Mrs. J. M. Bodenheimer.
Publicity Chairman—Mrs. M. D. Hargrove.
Parliamentarian—Mrs. C. E. Rew.

ORLEANS PARISH

President—Mrs. W. P. Gardiner.
President-Elect—Mrs. Jules Myron Davidson.
First Vice-President—Mrs. Alton Ochsner.
Second Vice-President—Mrs. Daniel Silverman.
Third Vice-President—Mrs. George D. Feldner.
Fourth Vice-President—Mrs. Clyde Brooks.
Treasurer—Mrs. Aynaud Hebert.
Recording Secretary—Mrs. H. Vernon Sims.
Corresponding Secretary—Mrs. John S. Dunn.
Historian—Mrs. Anees Mogabgab.
Parliamentarian—Mrs. Frank C. Hava.
Publicity Chairman—Mrs. Edgar Burns.

CALCASIEU PARISH

President—Mrs. L. Z. Kusher.
President-Elect—Mrs. McKinney.
First Vice-President—Mrs. W. P. Bordelon.
Second Vice-President—Mrs. J. A. Crawford.
Recording Secretary—Mrs. Olin Moss.
Corresponding Secretary—Mrs. W. P. Bordelon.
Treasurer—Mrs. H. B. White.
Parliamentarian—Mrs. T. H. Watkins.

OUACHITA PARISH

President—Mrs. J. P. Brown.
First Vice-President—Mrs. A. L. Peters.
Second Vice-President—Mrs. A. D. Tisdale.
Treasurer—Mrs. I. J. Wolff.
Recording Secretary—Mrs. D. T. Milam.
Corresponding Secretary—Mrs. Henson Coon.
Publicity Chairman—Mrs. W. L. Bendel.
Historian—Mrs. P. L. Perot.
Parliamentarian—Mrs. E. R. Yancey.

JEFFERSON DAVIS PARISH

President—Mrs. G. W. Remage.
Vice-President—Mrs. C. A. Martin.
Secretary—Mrs. R. R. Arceneaux.
Treasurer—Mrs. F. W. Harrell.

CLAIBORNE PARISH

President—Mrs. H. R. Marlatt.
Vice-President—Mrs. S. A. Tatum.
Secretary-Treasurer—Mrs. E. B. Middleton.
Publicity Chairman—Mrs. C. W. Phillips.
Program Chairman—Mrs. E. A. Campbell.
Hygeia Chairman—Mrs. M. J. Rivenbark.
Mrs. George D. Feldner, Chairman,
Press and Publicity.

CLAIBORNE PARISH

The Woman's Auxiliary to the Claiborne Parish Medical Society held their September meeting in Homer at the home of Mrs. S. A. Tatum.

Splendid reports were made from Hygeia and Magazine chairmen. Hygeia Health Magazine has been placed in the nine high schools of the parish; a donation of 150 magazines to the Claiborne Parish Health Unit to be distributed in the communities by the health nurses; some glasses were also purchased for indigent children and a contribution to the Indigent Physicians' Fund was made.

Many of the principal functions of the auxiliary were discussed and definite plans for the annual sale of the Tuberculosis Seals and essay contest for school children were among the activities to be accomplished during the coming year.

The meeting adjourned to meet in the home of Mrs. J. C. Sherman, Haynesville, October 9. The president, Mrs. H. R. Marlatt urges all members to be present as plans will be presented at this meeting and the program of work for the year decided upon.

We were called to mourn the loss of the mothers of Doctors H. R. Marlatt and E. A. Campbell of Homer. The Auxiliary extends its deep sympathy and may the memory of the honorable lives just ended sustain and comfort you.

Mrs. C. W. Phillips,
Publicity Chairman.

BOOK REVIEWS

Examination of the Patient and Symptomatic Diagnosis: By John Watts Murray, M. D., 2nd ed. St. Louis. C. V. Mosby Co., 1936. pp. 1219. Price $10.00.

The second edition of this excellent book appears ten years after the first. In the meantime there have been many advances made in medicine which have been incorporated where and when indicated in the new edition.

The book is divided into two main sections, one of which has to do largely with history taking and examination of the patient, and the second part with disease of single organs or systems of the body. The book is largely for the use of students. For example, interrogations are used repeatedly, which questions must be answered by the examiner, in this instance, presumably the student. Thus under the voice the question is asked "Is the voice weak? Is voice lost? Is it a nasal voice?" If this is found to be the case then the answer is given below the question. If the book is being used by the student he first should

review in his mind causes for these phenomena and then secure the answer. The reviewer doubts that this method of presenting the subject would be of particular interest to the practitioner of medicine. As a matter of fact it makes for difficult reading and makes it also difficult for reference. The format of the book on the whole is good. The illustrations, however, are not clear and while well selected, on account of the lack of clarity, many of them might well have been omitted. The index is by no means adequate.

J. H. MUSSER, M. D.

A Treatise on Medical Jurisprudence: By Benton S. Oppenheimer, LL.B., LL.M. Baltimore. William Wood and Company, 1935. pp. 290. Price $5.00.

This volume, for review, deals with medical jurisprudence in its entirety, and offers for consideration a foreword with nine (9) chapters, as follows:

1. Medical Jurisprudence and the Practice of Medicine.
2. Relation between Physician and Patient.
3. Duties and Obligations of Physician to Patient.
4. Malpractice.
5. Actions.
6. Evidence.
7. Hospitals.
9. Miscellaneous.
8. Dying Declarations,

together with index of cases and index of topics concluding.

It is well written in continuity, by one who ranks foremost in the realm of medico-legal jurisprudence with the topics clearly explained, readable and easily assimilated and understood, for the benefit of the physician in general and the specialist in particular.

The historical and chronological sequence bespeaks a painstaking investigation; especially is it noted, under "Medical Jurisprudence and the Practice of Medicine", that in the early centuries the church was closely allied to medicine.

In the chapter on "Evidence", the question of the functions of a neuropsychiatrist for the purpose of commitment, is very well covered; likewise, the question of a physician as expert witness. Later on, under "Miscellaneous", the office of coroner is clearly and distinctly defined. However, some criticism has been leveled in that direction to the instances where medical intelligence has been sacrificed to political considerations, with resultant inefficiency.

The volume is well written, composed and printed by one of our very well-known publishers, will hold the attention of the reader, and should be added to the collateral bookshelf of every neuropsychiatrist and coroner.

WALTER J. OTIS, M. D.

What You Should Know About Heart Disease: By Harold E. B. Pardee, M. D. Phila., Lea & Febiger, 1935, 2nd ed. pp. 127. Price $1.50.

This is the second edition of this small volume intended for the education and guidance of the cardiac patient. Clearly written, it covers the subject matter sufficiently to accomplish its purpose. Placed in the hands of some intelligent patients it might well serve a useful purpose, but advice and explanation to cardiacs, as to all classes of patients, seems to the reviewer to be an individual problem, and indiscriminate distribution of such a book to all persons with heart disease might do more harm than good.

WILLARD R. WIRTH, M. D.

"Medical Papers" Dedicated to Henry Asbury Christian; in honor of his sixtieth birthday, Feb. 17, 1936. Boston, Peter Bent Brigham Hospital, 1936. pp. 1000.

Someone has aptly remarked that if more taffy and less epitaphy prevailed among men, the millenium would arrive much quicker. This magnificent volume of medical papers dedicated to that great physician and teacher, Henry Asbury Christian, from his present and past associates and House Officers at the Peter Bent Brigham Hospital at Boston, Mass., in honor of his sixtieth birthday is a worthy tribute to a great man. Men who have achieved great eminence in American medicine have participated in this birthday celebration with the result that the reader is invited to an intellectual and cultural feast with the finest of viands served up to him from all fields of medicine. Subjects of medical interest still the possession of the medical minority, are here presented beautifully and capably. It is a book of 1000 pages, well gotten up and in moments of relaxation a fine companion.

I. L. ROBBINS, M. D.

Medical Science Exhibits: A Century of Progress, By Eben J. Carey, Sc. D., M. D. Chicago, Century of Progress, 1936. pp. 204.

This record of the scientific exhibits of the Century of Progress in Chicago, 1933-34, will serve not only as historical data of this occasion, but will be even more valuable as suggestive material for methods of display of scientific information. The volume is profusely illustrated.

MARY LOUISE MARSHALL.

Why Bring That Up? By J. F. Montague, M. D. New York, Home Health Library, Inc., 1936. pp. 130.

The author's subtitle, "To and from seasickness" serves well as a description of the volume. Printed

on sea-green paper, and illustrated with inset sketches, appropriately chosen, an interesting volume has been achieved on this deplorable malady. The book will serve as a welcome gift to anyone contemplating a sea voyage, for actual directions are included which if followed carefully, will surely lessen and perhaps prevent an attack of seasickness. Since so little has been written on this subject, Dr. Montague's book is most timely, as well as affording humorous entertainment in the author's best style.

MARY LOUISE MARSHALL.

Heart Disease and Tuberculosis—Efforts, Including Methods of Diaphragmatic and Costal Respiration, To Lessen Their Prevalence: By Adolphus Knopf, M. D. New York, 1936. pp 108.

This small volume consists essentially of a rather sketchy account of the author's views of heart disease and tuberculosis as originally published in several numbers of The Medical Record. It was issued by the patients at the Potts Memorial Hospital.

Dr. Knopf believes that by means of his forced system of deep inhalations tuberculosis and certain forms of heart disease may be either prevented or cured. He has written extensively on this same subject previously and expresses the same optimism for these methods that characterized his earlier works. In detail, the exercises which are to accomplish this result are described; several illustrations depict the exercises. With this main thesis and with his faith in the efficacy of BCG as a preventive measure most authorities of the day would be inclined not to concur.

The remainder of the book is given over to a discussion of the more generally accepted concepts of tuberculosis and to the increasing prevalence of cardiac disease. Throughout the discussions, the author has distributed his views on the social and economic implications of disese.

This book is hardly one to be decommended to the indiscriminating reader.

SYDNEY JACOBS, M. D.

On Percussion of the Chest—Being a Translation of Auenbrugger's Original Treatise Entitled, "Inventum Novum Ex Percussione Thoracis Humani, Ut Signo Abstrusos Interni Pectoris Morbos Detegendi" (Vienna, 1761): By John Forbes, M. D. (London, 1824): Introduction by Henry E. Sigerist. Baltimore, Johns Hopkins Press, 1936. p. 31.

Although Auenbrugger's treatise is a classic, it has been translated into English only once, and that was in 1824 when John Forbes of London included it in his book on a consideration of diseases of the chest. In making available the English rendition of this epoch-making contribution to clinical medicine, Dr. Sigerist has been of great service to the profession. Originally, the contents of this small volume were published in the Bulletin of the Institute of the History of Medicine.

One historian has observed that although this little book was unsaleable in its day, it is now worth more than its weight in gold. The use of mediate percussion was not generally accepted for a long time after Auenbrugger announced it in 1760 because the practitioners of that time were not quite ready to grasp the significance of the newer discoveries in the fields of physiology and anatomy nor were they willing to apply them to their clinical problems. Auenbrugger worked seven years perfecting his method of mediate percussion (or of the "new sign") before he was willing to publish his observations. It is interesting to note that he insisted on a thorough understanding of the normal sounds elicited on percussion before applying this method to the detection of disease.

This delightful volume will well repay any reader and is to be enthusiastically recommended to all those who have to do with any phase of the healing art.

SYDNEY JACOBS, M.D.

The Diagnosis and Treatment of Pulmonary Tuberculosis: By John B. Hawes 2d., M. D. and Moses J. Stone, M. D. Philadelphia, Lea and Febiger, 1936. pp. 215. Price $2.75.

This is a splendid panoramic view of modern tuberculosis. From the vantage point of the reviewer one readily discerns the new and tried landmarks in the realms of modern diagnosis and treatment. This small and well written handbook is a fine guide to the more comprehensive study of pulmonary tuberculosis and a most reliable and ready reference. Bibliographical data are appended.

I. L. ROBBINS, M. D.

PUBLICATIONS RECEIVED

Lea & Febiger, Philadelphia: Neuro-Anatomy by A. Kuntz, Ph. D., M. D. Chemical Procedures for Clinical Laboratories by Marjorie R. Mattice, A. B., Sc. M.

D. Appleton-Century Company, New York: Medicine & Mankind by Iago Galdston, M. D.

J. B. Lippincott Company, Philadelphia: International Clinics by Louis Hamman, M. D.

The C. V. Mosby Company, St. Louis: Fundamentals of Human Physiology by J. J. R. Macleod, M. B., D. Sc., F. R. S. Principles of Chemistry by Joseph H. Roe, Ph. D.

W. B. Saunders Company, Philadelphia: Diseases of the Air and Food Passages of Foreign-Body Origin by C. Jackson, M. D., and C. L. Jackson, M. D.